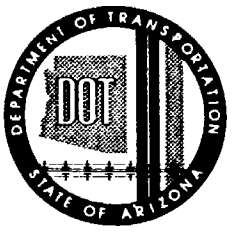

ARIZONA DEPARTMENT OF TRANSPORTATION

REPORT NUMBER: FHWA-AZ88-241

CONSTRUCTION OFFICE AUTOMATION VOLUME III

Final

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May 1988

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in cooperation with
U.S. Department of Transportation
Federal Highway Administration

TECHNICAL REPORT DOCUMENTATION PAGE

1. REPORT NO.	2. GOVERNMENT ACCESSION NO.	3. RECIPIENT'S CATALOG NO.
FHWA-AZ88-241		

4. TITLE AND SUBTITLE	5. REPORT DATE
CONSTRUCTION OFFICE AUTOMATION Volume III - Construction Material Testing Manual	May 1988 6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S)	8. PERFORMING ORGANIZATION REPORT NO.
Toby Martin, Tony Kreider, Max High, Rudolf Kolaja	
9. PERFORMING ORGANIZATION NAME AND ADDRESS	10. WORK UNIT NO.
Arizona Department of Transportation Highways Division 206 S. 17th Avenue, Phoenix, Arizona 85007	11. CONTRACT OR GRANT NO. HPR-PL-1(31) Item 241
12. SPONSORING AGENCY NAME AND ADDRESS	13. TYPE OF REPORT & PERIOD COVERED
ARIZONA DEPARTMENT OF TRANSPORTATION 206 S. 17TH AVENUE PHOENIX, ARIZONA 85007	Final Report January 1984 - August 1986 14. SPONSORING AGENCY CODE

15. SUPPLEMENTARY NOTES

Prepared in cooperation with the U.S. Department of Transportation, Federal Highway Administration

16. ABSTRACT

This research project was aimed at increasing the productivity of construction, office, and laboratory functions. Application of microcomputer procedures in highway construction has replaced existing manual procedures for construction progress estimate processing and material test computations.

The project has enhanced the information flow to project engineers, area engineers, district engineers and headquarter managers in an efficient manner. It has developed a total microcomputer hardware/software configuration that enables interfacing with the mainframe computer. The existing field office personnel can operate each of the systems with less than one week training of each system.

The final report of this study is divided into three volumes:

Volume I. - Final Report
Volume II. - Construction Progress Estimate Manual
Volume III. - Construction Material Testing Manual

Volume I - Final Report describes the system hardware selection process and the development, implementation, training, conclusions, and recommendations for each of the Construction Progress Estimate and Construction Material Testing systems.

17. KEY WORDS	18. DISTRIBUTION STATEMENT
Automated Procedures Construction Progress Estimate Material Sample Test Construction Materials Testing	Document is available to the U.S. public through the National Technical Information Service, Springfield, Virginia 22161

19. SECURITY CLASSIF. (of this report)	20. SECURITY CLASSIF. (of this page)	21. NO. OF PAGES	22. PRICE
Unclassified	Unclassified	191	

CONSTRUCTION MATERIALS TESTING MANUAL

TABLE OF CONTENTS

INTRODUCTION

This manual outlines ADOT'S Construction Materials Testing (CMT) procedures for calculating, checking, and logging of material tests in a project laboratory using a microcomputer. It is intended to serve as both a Systems and Users Manual for use by Construction Managers at all levels.

Chapter 1 presents a look at Construction Materials Testing at the project level, and gives an overview of the program modules and their applications.

Chapter 2 through 10 presents a combination of menus and program modules that address each area of material testing. They are written in a manner to attempt the following:

1. Logical reading from beginning to end.
2. As a resource document for the user.
3. A training document referring to example test samples listed in APPENDIX D.

Appendix A ===> INSTALLATION: Getting started.

Appendix B ===> BACKUP: How to protect the work invested.

Appendix C ===> RECOVERY: What to do when something goes wrong.

Appendix D ===> TEST PROJECT - MATERIAL SAMPLES

Appendix E ===> Contains reports associated with the TEST PROJECT samples and others as an example.

APPENDIX F ===> SYSTEM DOCUMENTATION.

APPENDIX G ===> MAINFRAME AND PC QUERY

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 1.0 ---- SYSTEM OVERVIEW
SECTION 1.0 ---- INTRODUCTION

The process of calculating and logging of material tests in project laboratories has changed very little over the years. This system or collection of program modules is an attempt to automate some of the tedious time consuming calculations and reporting of tests associated with good quality control on construction projects. The sy tem as is should be able to accommodate most of the standard tests now being performed in project laboratories. Because material, material specifications and testing methods do vary significantly from project to project and year to year, an all encompassing "MATERIAL PROGRAM" to cover every condition is not available within the scope of this attempt.

Test examples are used throughout the manual and if applicable have been extracted directly from the "ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS TESTING MANUAL".

Where possible, the programs have been written so as not to restrict the applications as they are being used today. For clarification, two examples of this are:

+ The gradation specification module is written to accommodate a Fine Aggregate for grouting from a 3" sieve to a PI. No range restrictions due to reasonable or current logic.

+ The bin composite module allows up to 5 bins, and ranges from 3" to #200 with additive. Should accommodate all possibilities.

As quality control requirements change and affect the usefulness of these programs, the programs will have to be changed or replaced with new ones.

CHAPTER 1.0 ---- SYSTEM OVERVIEW
SECTION 1.1 ---- APPLICATIONS

The system in all its program modules utilizes existing source document forms now being used throughout ADOT in construction material testing. No additional documents or forms are required to use the microcomputer procedures.

The system features include the following application components:

+ One time entry of Project Material Specifications for a material in areas of gradations, proctors, asphalt concrete mix designs, and concrete mix designs.

+ Daily entry of laboratory and field tests raw data from existing forms.

+ Make calculation checks of data and log test to a permanent file.

+ Make corrections or delete records in all files containing project related data.

+ Produce working documents or work sheets for field technicians.

CHAPTER 1.0 ---- SYSTEM OVERVIEW
SECTION 1.2 ---- ORGANIZATION

The Data Base Organization is a collection of records generated by entering material sample test data taken from field and laboratory work documents. A unique record identifier labeled a 'Record Type', defines the data elements for all processing.

All records are written to the Daily File for editing until they are uploaded to the mainframe. The records are then moved to the Weekly File for further editing and report writing. After the weekly report is produced they are then moved to multiple Project Historical Files.

The programs write to and read data from other files which are of a support nature. These files hold information associated with material specifications, proctors, asphaltic concrete mix designs, and portland cement concrete mix designs. Each project within this group has its own files.

CHAPTER 1.0 ---- SYSTEM OVERVIEW
SECTION 1.3 ---- REPORTING

The CMT system yields the following reports.

+ Produce Weekly Project Log Reports for Central Materials, Area Engineers, Project Engineers and Engineering Technicians.

+ Produce Historical Project Reports containing all material tests entered into the system.

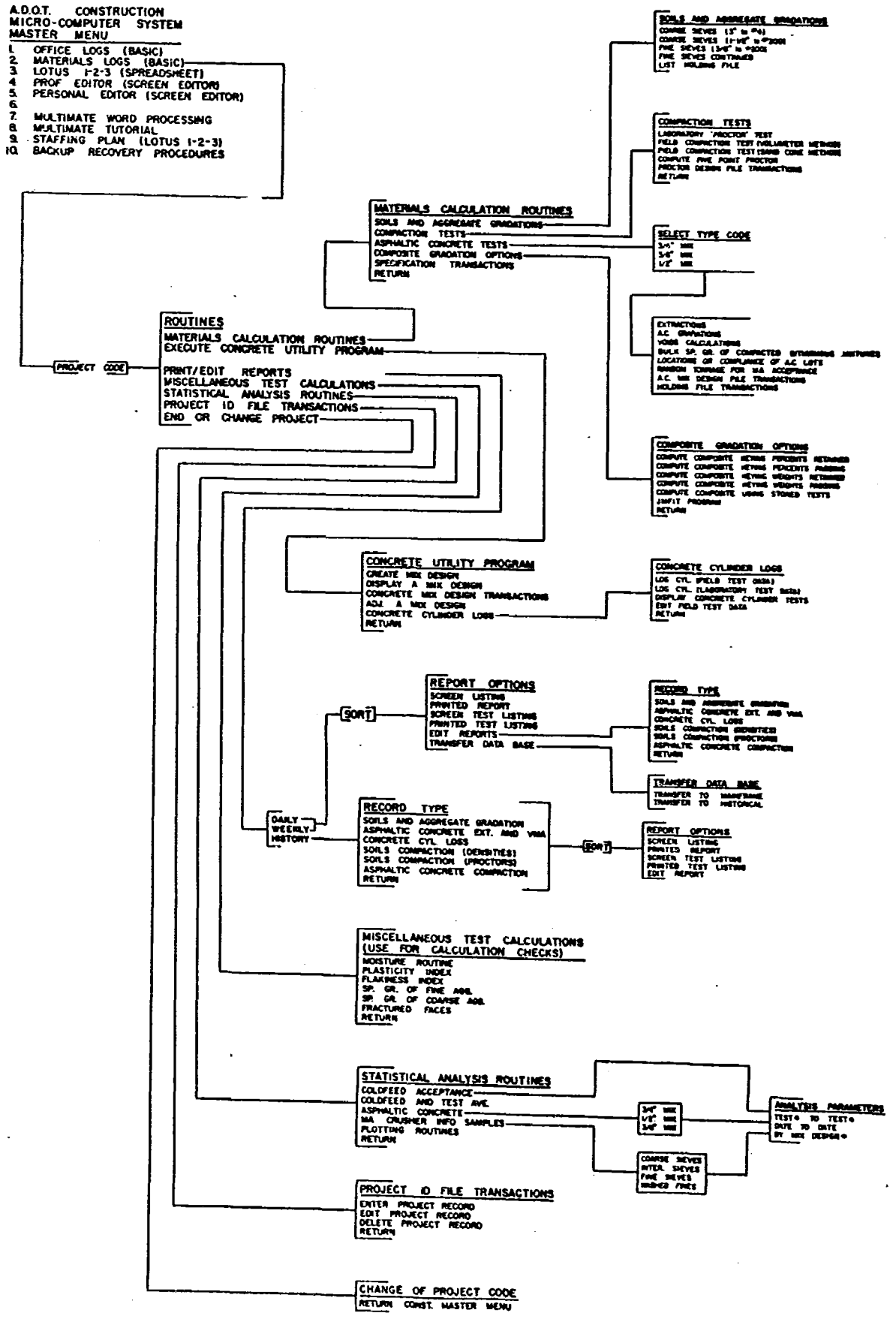
+ Produce statistical analysis reports on some material tests groupings.

+ Every screen image containing input or calculated data can be printed.

Samples of these reports are located in appendix E.

CMT

8-13-86


A.D.O.T. CONSTRUCTION
MICRO-COMPUTER SYSTEM
MASTER MENU
1. OFFICE LOGS (BASIC)
2. MATERIALS LOGS (BASIC)
3. LOTUS 1-2-3 (SPREADSHEET)
4. PROF EDITOR (SCREEN EDITOR)
5. PERSONAL EDITOR (SCREEN EDITOR)
6.
7. MULTIMATE WORD PROCESSING
8. MULTIMATE TUTORIAL
9. STAFFING PLAN (LOTUS 1-2-3)
10. BACKUP RECOVERY PROCEDURES
PROJECT CODE
ROUTINES
MATERIALS CALCULATION ROUTINES
EXECUTE CONCRETE UTILITY PROGRAM
PRINT/EDIT REPORTS
MISCELLANEOUS TEST CALCULATIONS
STATISTICAL ANALYSIS ROUTINES
PROJECT ID FILE TRANSACTIONS
END OR CHANGE PROJECT
MATERIALS CALCULATION ROUTINES
SOILS AND AGGREGATE GRADATIONS
COMPACTION TESTS
ASPHALTIC CONCRETE TESTS
COMPOSITE GRADATION OPTIONS
SPECIFICATION TRANSACTIONS
RETURN
SOILS AND AGGREGATE GRADATIONS
COMPACTION TESTS
LABORATORY "PROCTOR" TEST
FIELD COMPACTION TEST (VOLUMETER METHOD)
FIELD COMPACTION TEST (SAND CONE METHOD)
COMPUTE FINE POINT PROCTOR
PROCTOR DESIGN FILE TRANSACTIONS
RETURN
SELECT TYPE CODE
EXTRACTIONS
A.C. GRADATIONS
VOIDS CALCULATIONS
BULK SP. GR. OF COMPACTED BITUMINOUS MIXTURES
LOCATIONS OF COMPLIANCE OF A.C. LOTS
RANDOM TONNAGE FOR M.A. ACCEPTANCE
A.C. MIX DESIGN FILE TRANSACTIONS
HOLDING FILE TRANSACTIONS
COMPOSITE GRADATION OPTIONS
COMPUTE COMPOSITE MIXING PERCENTS RETAINED
COMPUTE COMPOSITE MIXING PERCENTS PASSING
COMPUTE COMPOSITE MIXING WEIGHTS RETAINED
COMPUTE COMPOSITE MIXING WEIGHTS PASSING
COMPUTE COMPOSITE USING STORED TESTS
JMFIT PROGRAM
RETURN
CONCRETE UTILITY PROGRAM
CREATE MIX DESIGN
DISPLAY A MIX DESIGN
CONCRETE MIX DESIGN TRANSACTIONS
ADJ. A MIX DESIGN
CONCRETE CYLINDER LOGS
RETURN
CONCRETE CYLINDER LOGS
LOG CYL. (FIELD TEST DATA)
LOG CYL. (LABORATORY TEST DATA)
DISPLAY CONCRETE CYLINDER TESTS
EDIT FIELD TEST DATA
RETURN
REPORT OPTIONS
SCREEN LISTING
PRINTED REPORT
SCREEN TEST LISTING
PRINTED TEST LISTING
EDIT REPORTS
TRANSFER DATA BASE
SORT
RECORD TYPE
SOILS AND AGGREGATE GRADATION
ASPHALTIC CONCRETE EXT. AND VMA
CONCRETE CYL. LOGS
SOILS COMPACTION (DENSITIES)
SOILS COMPACTION (PROCTORS)
ASPHALTIC CONCRETE COMPACTION
RETURN
TRANSFER DATA BASE
TRANSFER TO MAINFRAME
TRANSFER TO HISTORICAL
DAILY
WEEKLY
HISTORY
RECORD TYPE
SOILS AND AGGREGATE GRADATION
ASPHALTIC CONCRETE EXT. AND VMA
CONCRETE CYL. LOGS
SOILS COMPACTION (DENSITIES)
SOILS COMPACTION (PROCTORS)
ASPHALTIC CONCRETE COMPACTION
RETURN
SORT
REPORT OPTIONS
SCREEN LISTING
PRINTED REPORT
SCREEN TEST LISTING
PRINTED TEST LISTING
EDIT REPORT
MISCELLANEOUS TEST CALCULATIONS
(USE FOR CALCULATION CHECKS)
MOISTURE ROUTINE
PLASTICITY INDEX
FLAKINESS INDEX
SP. GR. OF FINE AGG.
SP. GR. OF COARSE AGG.
FRACTURED FACES
RETURN
STATISTICAL ANALYSIS ROUTINES
COLDFEED ACCEPTANCE
COLDFEED AND TEST AVE.
ASPHALTIC CONCRETE
MA CRUSHER INFO SAMPLES
PLOTTING ROUTINES
RETURN
3/4" MIX
1/2" MIX
3/8" MIX
COARSE SIEVES
INTER. SIEVES
FINE SIEVES
WASHED FINES
ANALYSIS PARAMETERS
TEST # TO TEST #
DATE TO DATE
BY MIX DESIGN #
PROJECT ID FILE TRANSACTIONS
ENTER PROJECT RECORD
EDIT PROJECT RECORD
DELETE PROJECT RECORD
RETURN
CHANGE OF PROJECT CODE
RETURN CONST. MASTER MENU

CHAPTER 2.0 -- MASTER MENU
SECTION 1.0 -- OPTIONS

Screen Image 2.1 is the operating system screen and the first image that appears to an operator after starting the computer. The operator should type the number (2) to use the Construction Materials System.

```
ADOT CONSTRUCTION MICRO-COMPUTER SYSTEM
                MASTER MENU

    1. Office Logs      (Basic)
    2. Materials Logs   (Basic)
    3. Lotus 1-2-3      (Spreadsheet)
    4. Prof Editor      (Screen Editor)
    5. Personal Editor  (Screen Editor)
    6.
    7. Word Processing  (Multimate)
    8. Multimate Tutorial
    9. Staffing Plan    (Lotus 1-2-3)
   10. Backup & Recovery Procedures
```

SCREEN IMAGE 2.1

Screen Image 2.2 is the first screen of the CMT system. The question asked of the operator is "What project are we going to work on?". Enter the PROJECT CODE associated with a listed project. If your project is not listed, then pick any one listed and the NEXT SCREEN will allow you access to a menu named "PROJECT ID FILE TRANSACTIONS" that among other options will let you BUILD A NEW PROJECT.

```
          ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE              PROJECT NUMBER              PROJECT NAME
    1112                  IXF-084-(0)          ***** TEST PROJECT *****

ENTER PROJECT CODE ....
```

SCREEN IMAGE 2.2

CHAPTER 2.0 -- MASTER MENU
SECTION 1.0 -- OPTIONS

After entering PROJECT CODE, SCREEN IMAGE 2.3 is the next screen you will see. The only difference is the addition of CHAPTERS and SECTIONS enclosed in parenthesis (). These will always be shown in the manual to aid you in finding the correct application instructions.

The "BOUNCE BAR POSITION" or selection will always be represented with a row of asterisks.

```
*****************************
*                           *
*****************************
```

When in a Bounce Bar Menu the Esc key may always be used to go directly to the previous menu.

EXAMPLE:
Choosing "MATERIALS CALCULATION ROUTINES" you will go to Chapter 3.1.0 to select next menu. NO Section is shown. A section WHEN SHOWN WILL BE PRECEEDED BY A HYPHEN - SUCH AS (3.1.1-1.1).

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT # = IXF-084-1(0) NAME = ***** TEST PROJECT *****
RE/SUPERVISOR = MR T CONTRACTOR = LIGHTNING CONSTRUCTION

ROUTINES

* (3.1.0)	MATERIALS CALCULATION ROUTINES *
(4.1.0)	EXECUTE CONCRETE UTILITY PROGRAM
(5.1.0)	PRINT/EDIT REPORTS
(7.1.0)	MISCELLANEOUS TEST CALCULATIONS
(8.1.0)	STATISTICAL ANALYSIS ROUTINES
(9.1.0)	PROJECT ID FILE TRANSACTIONS
(10.1.0)	END OR CHANGE PROJECTS

SCREEN IMAGE 2.3

CHAPTER 3.1.0 -- LABORATORY CALCULATION ROUTINES
SECTION 1.0 ---- OPTIONS

Having chosen "MATERIALS CALCULATION ROUTINES" from your previous menu, you have a NEW MENU with OPTIONS as shown in SCREEN IMAGE 3.01.

EXAMPLE:
Choosing "SOILS AND AGGREGATE GRADATIONS" you will go to Chapter 3.1.1 to select next menu.

```
**************************************************************************
*                                                                        *
*   NOTE:                                                                *
*        If you have not entered Sieve Specifications associated with    *
*   your material previous to this procedure, you should select          *
*   "SPECIFICATION TRANSACTIONS" first.  After completing spec entry,    *
*   go to "SOILS AND AGGREGATE GRADATIONS".                              *
*                                                                        *
**************************************************************************
```

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

MATERIAL CALCULATION ROUTINES

```
*********************************************************
* (3.1.1)              SOILS AND AGGREGATE GRADATIONS   *
*********************************************************
  (3.1.2)              COMPACTION TESTS

  (3.1.3)              ASPHALTIC CONCRETE TESTS

  (3.1.4)              COMPOSITE GRADATIONS

  (3.1.5)              SPECIFICATION TRANSACTIONS

                       RETURN
```

SCREEN IMAGE 3.01

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.1 -- SOILS AND AGGREGATE GRADATION
SECTION 1.0 ---- OPTIONS

Having chosen "SOILS AND AGGREGATE GRADATIONS" from your previous menu, you have a NEW MENU with OPTIONS as shown in SCREEN IMAGE 3.02.

EXAMPLE:
Choosing "COARSE SIEVES 3" TO #4" you will go to Chapter 3.1.1, Section 1.1 for first prompting screen.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

SOILS AND AGGREGATE GRADATIONS

* (3.1.1-1.1)	COARSE SIEVES 3" To #4 *
(3.1.1-1.2)	COARSE SIEVES 1 1/2" To #200
(3.1.1-1.3)	FINE SIEVES 3/8" To #200
(3.1.1-1.4)	FINE SIEVES CONTINUED
(3.1.1-1.5)	LIST HOLDING FILE

SCREEN IMAGE 3.02

CHAPTER 3.1.1 -- SOILS AND AGGREGATE GRADATION
SECTION 1.1 ---- COARSE SIEVES 3" TO #4

Having chosen "COARSE SIEVES 3" To #4" from the previous menu, the computer will now print a screen image containing statements for which you are to respond with the correct information.

If the statements contain dots where information is to be entered, then the backspace key, backtab key, enter, and the left and right cursor keys may be used. The backpace key works by deleting the last character on the line if the user is past the last character. The backtab key moves the cursor to the previous line, or if on the top line, then to the bottom line. The enter key moves the cursor to the next line, or if on the bottom line, then the choices for that screen will appear at the bottom of the screen. The program assumes you will be using the keypad to enter numbers except on Bounce Bar Menus; therefore, if you wish to use the left and right cursor keys, pressing NumLock directly above the keypad will activate them. Pressing NumLock again will restore the keypad to numbers.

If the statements that appear do not contain dots and appear one at a time then only the backspace key and enter key may be used. Do not attempt to use any other screen editing keys.

The first screen will prompt you as shown in SCREEN IMAGE 3.03. Keying in the responses as requested will take you to the next screen shown in SCREEN IMAGE 3.04.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

MATERIAL CODE EM <==== A

TYPE CODE .. <==== A1

SPEC # 1 <==== A2

TOTAL SAMPLE WEIGHT 5100. <==== B

SCREEN IMAGE 3.03

CHAPTER 3.1.1 -- SOILS AND AGGREGATE GRADATION
SECTION 1.1 ---- COARSE SIEVES 3" To #4

The examples we will use are taken directly from the "ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS TESTING MANUAL" whenever possible. This example will use FIGURE #3 of Section SERIES 200 - SOIL & AGGREGATE. This is reproduced in the appendix as EXAMPLE #1.

EXAMPLE #1 EXAMPLE #1 EXAMPLE #1 EXAMPLE #1

Keying in the data as shown in SCREEN IMAGE 3.04, you will proceed to SCREEN IMAGE 3.05 showing INPUT data and all CALCULATED data to complete coarse sieve an lysis. If correct ENTER a "C" and you will move to the FINE portion of sieve analysis.

If fine sieves are to be entered later, enter an "L" and you will move to the "Tabulation Screen", Screen Image 3.10. Upon completing the data required, you may enter an "H" and the partially completed test data will be stored in a HOLDING FILE for later retrieval.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

SIEVE	WEIGHT		COARSE SIEVES
3"	....	<=== C	
2 1/2"	....	<=== D	
2"	....	<=== E	
1 1/2"	....	<=== F	
1"	....	<=== G	
3/4"	....	<=== H	
1/2"	360.	<=== I	
3/8"	880.	<=== J	
1/4"	1300	<=== K	
#4	380.	<=== L	
-#4	2180	<=== M	

SCREEN IMAGE 3.04

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.1 -- SOILS AND AGGREGATE GRADATION
SECTION 1.1 ---- COARSE SIEVES 3" TO #4

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

SIEVE	WEIGHT	% RET.	% PASS.	SPECIFICATION	N TEST AVG.
3"	0	0	100	X	
2 1/2"	0	0	100		
2"	0	0	100		
1 1/2"	0	0	100		
1"	0	0	100	X	
3/4"	0	0	100		
1/2"	360	7	93		
3/8"	880	17	76	X	
1/4"	1300	26	50		
#4	380	7		X	
-#4	2180		43 (42.7)		
TOTAL =	5100				

CONTINUE LOG QUIT

SCREEN IMAGE 3.05

Continuing with fine portion of sieve analysis, the program will first prompt you as shown in SCREEN IMAGE 3.06 and will then proceed to SCREEN IMAGE 3.07 for further prompting.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ENTER TOTAL DRY WT. OF SPLIT SAMPLE 539 <==== N

SCREEN IMAGE 3.06

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.1 -- SOILS AND AGGREGATE GRADATION
SECTION 1.1 ---- COARSE SIEVES 3" TO #4

Completing entry as exhibited in SCREEN IMAGE 3.07 the INPUT and CALCULATED data will print as shown in SCREEN IMAGE 3.08.

If all calculations are correct, we will now opt to LOG RESULTS by entering an "L". SCREEN IMAGE 3.09 will appear.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

SIEVE	WEIGHT RET.	
#8	102.	<==== P
#10	84..	<==== Q
#16	76..	<==== R
#30	68..	<==== S
#40	54..	<==== T
#50	41..	<==== U
#100	12..	<==== V
#200	44..	<==== W
-#200	1..	<==== X

SCREEN IMAGE 3.07

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

SIEVE	WEIGHT	% RET.	% PASS.	SPECIFICATION	N TEST AVG.
#8	102	8	35		
#10	84	7	28		
#16	76	6	22		
#30	68	5	17		
#40	54	4	13		
#50	41	3	10		
#100	12	1	9	X	
#200	44	4		X	
-#200	1		4.6		
TOTAL =	482				
ELUT =	57				

LOG QUIT

SCREEN IMAGE 3.08

CHAPTER 3.1.1 -- SOILS AND AGGREGATE GRADATION
SECTION 1.1 ---- COARSE SIEVES 3" To #4

The next information requested is represented on SCREEN IMAGE 3.09. If no LL or PL tests have been run, simply press enter and ZERO VALUES for each variable will be retained in the record. Next, SCREEN IMAGE 3.10 will prompt you for information as recorded on the "SAMPLE TABULATION" part of the document.

After completing the screen, keying the first letter of the word describing the action wanted will execute that action. LOG will write the record to the DAILY FILE. REMARKS will LOG the test and bring up the REMARKS editor. CORRECTION will allow you to go back and correct any errors on the screen. QUIT takes you directly to the previous menu and no record will be logged. Keying an "R", we move to SCREEN IMAGE 3.10A.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ENTER PI or F/INDEX (##) _ <==== Z
ENTER SAND EQUIVALENT or % CRUSHED FACES (##) _ <==== AA
ENTER PERCENT MOISTURE _ <==== AB

SCREEN IMAGE 3.09

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

PROJ. CODE	MATL	TYPE	PUR	LAB	SPEC #	SIZE	SIZE %
1112	EM	..	I	P	1	.	..

TEST #	SUFFIX	SAMPLED BY	DATE	TIME
1...	..	J JONES.	072184	1212

LIFT #	SAMPLED FROM	RDWY	STATION
4.	20' LEFT C/L.....	EB	114+50.

P/E CODE	RDWY	STATION OR PIT #
E	WB	188+50.

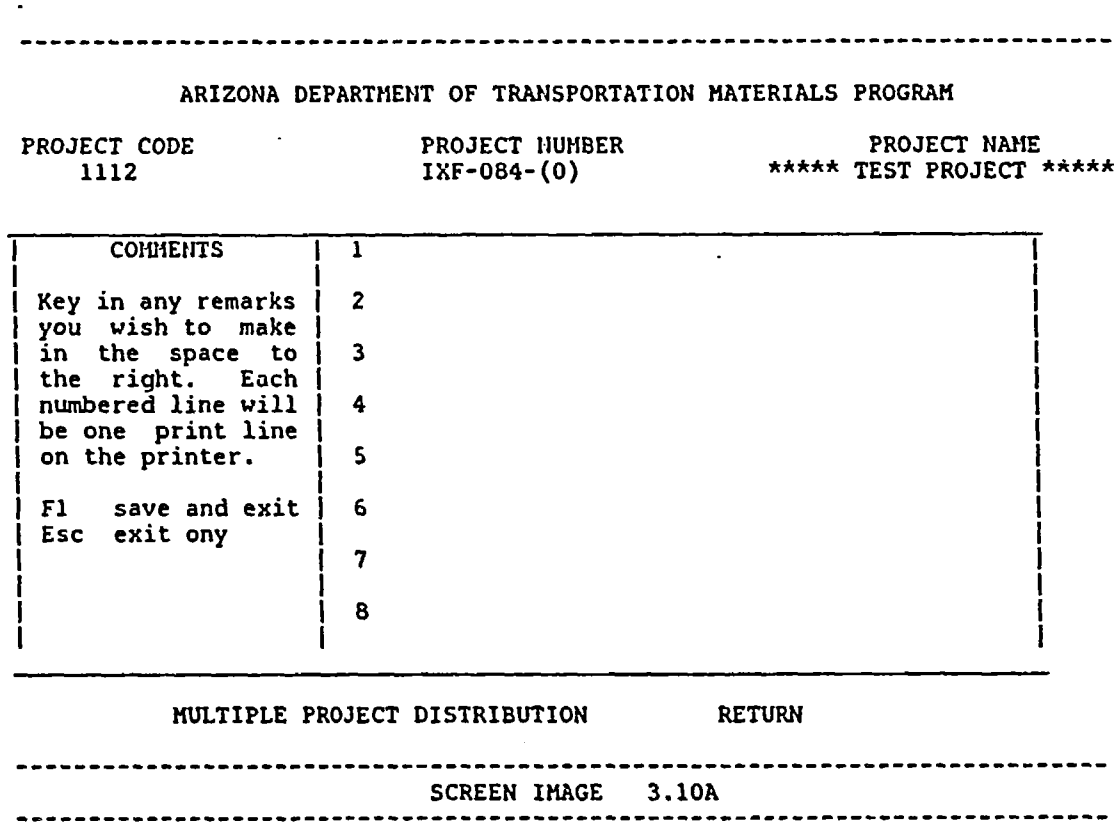
LOG REMARKS (HOLD) CORRECTION QUIT

SCREEN IMAGE 3.10

CHAPTER 3.1.1 -- SOILS AND AGGREGATE GRADATION
SECTION 1.1 ---- COARSE SIEVES (3" To #4)

The remarks editor as shown in SCREEN IMAGE 3.10A is a full screen editor. Each full line of text is represented by two entry lines and will be shown as one line when printed. The begining of each full line is numbered for your reference. You may include up to 96 full lines of remarks information with any one test. The editor allows full use of all screen editing keys on the keypad and the backspace key. When entry is complete, PRESS the F1 key and your remarks will be saved. Pressing the Esc key will exit the program and no remarks will be saved. After making the proper choice, the program prompts you with "MULTIPLE PROJECT DISTRIBUTION" or "RETURN". By keying an "M", the logging screen will reappear. This is provided for laboratory testing of samples that are to be distributed to MULTIPLE PROJECTS. Change the project code and any other required data as shown on the screen and proceed as before.

NOTE: For more detailed information on the LOGGING and REMARKS EDITOR see APPENDIX



SCREEN IMAGE 3.10A

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.1 -- SOILS AND AGGREGATE GRADATION
SECTION 1.2 ---- COARSE SIEVES 1 1/2" To #200

Having chosen "COARSE SIEVES 1 1/2" To #200" from the previous menu, the computer will now print a screen image containing statements for which you are to respond with the correct information.

The examples we will use are taken directly from the "ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS TESTING MANUAL" whenever possible. However, this example will use EXAMPLE #2 in the APPENDIX of this manual.

EXAMPLE #2 EXAMPLE #2 EXAMPLE #2 EXAMPLE #2

The first screen will be as shown in SCREEN IMAGE 3.11. Keying in the responses requested will take you to the next screen shown in SCREEN IMAGE 3.12.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

MATERIAL CODE EM <==== A

TYPE CODE .. <==== A1

SPEC # 1 <==== A2

TOTAL SAMPLE WEIGHT 1015 <==== B

SCREEN IMAGE 3.11

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.1 -- SOILS AND AGGREGATE GRADATION
SECTION 1.2 ---- COARSE SIEVES 1 1/2" TO #200

Keying in the data as shown in SCREEN IMAGE 3.12, you will proceed to SCREEN IMAGE 3.13 showing INPUT data and all CALCULATED data to complete coarse sieve analysis. If all calculations are correct, we will now opt to LOG RESULTS by entering an "L".

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

SIEVE	WEIGHT	COARSE SCREENS
1 1/2"	....	<==== C
1"	....	<==== D
3/4"	93..	<==== E
1/2"	194.	<==== F
3/8"	75..	<==== G
1/4"	179.	<==== H
#4	96..	<==== I
#8	87..	<==== J
#10	50..	<==== K
#16	85..	<==== L
#30	57..	<==== M
#40	22..	<==== N
#50	23..	<==== O
#100	28..	<==== P
#200	26..	<==== Q
-#200	...	<==== R

SCREEN IMAGE 3.12

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.1 -- SOILS AND AGGREGATE GRADATION
SECTION 1.2 ---- COARSE SIEVES 1 1/2" TO #200

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

SIEVE	WEIGHT	% RET.	% PASS.	SPECIFICATION	N TEST AVG.
1 1/2"	0	0	100		
1"	0	0	100		
3/4"	93	9	91		
1/2"	194	19	72		
3/8"	75	7	65		
1/4"	179	18	47		
#4	96	9	38		
#8	87	9	29		
#10	50	5	24		
#16	85	8	16		
#30	57	6	10		
#40	22	2	8		
#50	23	2	6		
#100	28	3	3		
#200	26	3			
-#200	0		0		
TOTAL =	1015				
ELUT =	0				

LOG QUIT

SCREEN IMAGE 3.13

CHAPTER 3.1.1 -- SOILS AND AGGREGATE GRADATION
SECTION 1.2 ---- COARSE SIEVES 1 1/2" to #200

The next information requested is represented on SCREEN IMAGE 3.14 If no LL or PL tests have been run, simply press enter and ZERO VALUES for each variable will be retained in the record. Next, SCREEN IMAGE 3.15 will prompt you for information as recorded on the "SAMPLE TABULATION" part of the document.

After completing the screen you may enter an "L" and all test data will be written to the "DAILY HOLDING FILE". If you make a mistake in an entry on this screen, key in a "C" and the CURSOR will return to the beginning.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ENTER PI or F/INDEX (##) _ <==== Z
ENTER SAND EQUIVALENT or % CRUSHED FACES (##) _ <==== AA
ENTER PERCENT MOISTURE _ <==== AB

SCREEN IMAGE 3.14

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

PROJ. CODE	MATL	TYPE	PUR	LAB	SPEC #	SIZE	SIZE #
1112	EM	..	I	P	1	.	..

TEST #	SUFFIX	SAMPLED BY	DATE	TIME
6...	.	J JONES.	072184	0130

LIFT #	SAMPLED FROM	RDWY	STATION
5.	130' RT C/L.....	WB	120+75.

P/E CODE	RDWY	STATION OR PIT #
P	..	#6670

LOG REMARKS CORRECTION QUIT

SCREEN IMAGE 3.15

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.1 -- SOILS AND AGGREGATE GRADATION
SECTION 1.3 ---- FINE SIEVES 3/8" TO #200

Having chosen "FINE SIEVES 3/8" to #200" from the previous menu, the computer will print a screen image containing statements for which you are to respond with the correct information.

The examples we will use are taken directly from the "ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS TESTING MANUAL", whenever possible. This example will use FIGURE #6 of Section SERIES 200 - SOIL & AGGREGATE. This is reproduced in the appendix as EXAMPLE #3.

EXAMPLE #3 EXAMPLE #3 EXAMPLE #3 EXAMPLE #3

The first screen will prompt you as shown in SCREEN IMAGE 3.16. Keying in the responses as requested will take you to the next screen shown in SCREEN IMAGE 3.17.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ENTER MATERIAL CODE FA <==== A

ENTER TYPE CODE GR <==== A1

ENTER SPEC # 1 <==== A2

ENTER TOTAL DRY WT. OF SPLIT SAMPLE 562 <==== B

SCREEN IMAGE 3.16

CHAPTER 3.1.1 -- SOILS AND AGGREGATE GRADATION
SECTION 1.3 ---- FINE SIEVES (3/8" TO #200)

Keying in the data as shown in SCREEN IMAGE 3.17, you will proceed to SCREEN IMAGE 3.18 showing INPUT data and all CALCULATED data to complete fine sieve analysis. If all calculations are correct, we will now opt to LOG RESULTS by entering an "L".

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

SIEVE	WEIGHT RET.	
3/8"	?	<==== C
1/4"	? 8	<==== D
#4	? 13	<==== E
#8	? 13	<==== F
#10	? 42	<==== G
#16	? 93	<==== H
#30	? 67	<==== I
#40	? 123	<==== J
#50	? 41	<==== K
#100	? 121	<==== L
#200	? 24	<==== M
-#200	? 2	<==== N

SCREEN IMAGE 3.17

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

SIEVE	WEIGHT	% RET.	% PASS.	SPECIFICATION	3 TEST AVG.
3/8"	0	0	100	100	
1/4"	8	1	99		
#4	13	3	96	94-100	
#8	13	2	94		
#10	42	7	87		
#16	93	17	71	45-80	
#30	67	12	58		
#40	123	23	35		
#50	41	7	28	0-30	
#100	121	21	7	0-10	
#200	24	4		0-4.0	
-#200	2		3		
TOTAL =	547				
ELUT =	15				
F/N = 2.42					

LOG QUIT

SCREEN IMAGE 3.18

CHAPTER 3.1.1 -- SOILS AND AGGREGATE GRADATION
SECTION 1.3 ---- FINE SIEVES (3/8" to #200)

The next information requested is represented on SCREEN IMAGE 3.19. If no LL or PL tests have been run, simply press enter and ZERO VALUES for each variable will be retained in the record. Next SCREEN IMAGE 3.20 will prompt you for information as recorded on the "SAMPLE TABULATION" part of the document.

After completing the screen you may enter an "L" and all test data will be written to the "DAILY HOLDING FILE". If you make a mistake in an entry on this screen, key in a "C" and the CURSOR will return to the beginning.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ENTER PI or F/INDEX (##) _ <==== Z
ENTER SAND EQUIVALENT or % CRUSHED FACES (##) _ <==== AA
ENTER PERCENT MOISTURE _ <==== AB

SCREEN IMAGE 3.19

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

PROJ. CODE	MATL	TYPE	PUR	LAB	SPEC #	SIZE	SIZE #
1112	FA	GR	A	P	1	.	..

TEST #	SUFFIX	SAMPLED BY	DATE	TIME
18..	.	J JONES.	072584	0330

LIFT #	SAMPLED FROM	RDWY	STATION
..	STOCKPILE.....	..	.....

P/E CODE	RDWY	STATION OR PIT #
.	..	.....

LOG REMARKS CORRECTION QUIT

SCREEN IMAGE 3.20

CHAPTER 3.1.1 -- SOILS AND AGGREGATE GRADATION
SECTION 1.4 ---- FINE SIEVES CONTINUED

Having chosen "FINE SIEVES CONTINUED" from the previous menu, the computer will now print a screen image containing statements for which you are to respond with the correct information.

This option on the menu is for retreiving tests from the holding file. We will assume that in example #1 the user picked "LOG" after entering the coarse screens and is now ready to continue with the fine screens.

EXAMPLE #4 EXAMPLE #4 EXAMPLE #4 EXAMPLE #4

The first screen will prompt you as shown in SCREEN IMAGE 3.21 for information needed to identify which test is wanted, at which point the program brings the test into memory. If for any reason the user changes his mind about entering the fine sieve information and intends to do so later, he should re-log the test to the holding file, otherwise, that test will be lost.

Keying in the requested information in SCREEN IMAGE 3.21 will then take you to SCREEN IMAGE 3.22.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

CONTINUATION

MATERIAL CODE EN <==== B

TYPE CODE .. <==== C

SPEC # 1 <==== D

TOTAL DRY WT. OF SPLIT SAMPLE 539.. <==== E

SIZE . <==== F

TEST # 1... <==== G

SUFFIX .. <==== H

SCREEN IMAGE 3.21

CHAPTER 3.1.1 -- SOILS AND AGGREGATE GRADATION
SECTION 1.4 ---- FINE SIEVES CONTINUED

Keying in the data as shown in SCREEN IMAGE 3.22, you will proceed to SCREEN IMAGE 3.23 showing INPUT data and all CALCULATED data to complete fine sieve analysis. The user may then either quit or continue with the logging portion as explained in example #1.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

SIEVE	WEIGHT RET.	
#8	102.	<==== P
#10	84..	<==== Q
#16	76..	<==== R
#30	68..	<==== S
#40	54..	<==== T
#50	41..	<==== U
#100	12..	<==== V
#200	44..	<==== W
-#200	1..	<==== X

SCREEN IMAGE 3.22

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

SIEVE	WEIGHT	% RET.	% PASS.	SPECIFICATION	N TEST AVG.
#8	102	8	35		
#10	84	7	28		
#16	76	6	22		
#30	68	5	17		
#40	54	4	13		
#50	41	3	10		
#100	12	1	9	X	
#200	44	4		X	
-#200	1		4.6		
TOTAL =	482				
ELUT =	57				

LOG QUIT

SCREEN IMAGE 3.23

CHAPTER 3.1.1 -- SOILS AND AGGREGATE GRADATION
SECTION 1.5 ---- LIST HOLDING FILE

This option is available to enable the user to determine what tests are waiting in the holding file to be completed. It merely lists all tests and then gives you the option to return to the previous menu by entering "C" or in some cases a need to delete the record by keying a "D". Screen image 3.25 illustrates this option.

ADOT MATERIALS PROGRAM SAMPLE TEST LISTING

PROJECT MATERIALS TEST LISTING FOR 03-20-86

REC #	PROJ. CODE	MATERIAL CODE	PUR	TYPE CODE	SIZE	SPEC #	TEST #	DATE SAMPLE
1	1112	EM	I			1	1	072184

CONTINUE DELETE

SCREEN IMAGE 3.25

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.2 -- COMPACTION TESTS
SECTION 1.0 ---- OPTIONS

Having chosen "COMPACTION TESTS" from your previous menu, shown in SCREEN IMAGE 3.25, you have a NEW MENU with OPTIONS displayed in SCREEN IMAGE 3.26.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

LABRATORY CALCULATION ROUTINES

(3.1.1) SOILS AND AGGREGATE GRADATIONS

(3.1.2) COMPACTION TESTS

(3.1.3) ASPHALTIC CONCRETE TESTS

(3.1.4) COMPOSITE GRADATIONS

(3.1.5) SPECIFICATION TRANSACTIONS (gradations)

RETURN

SCREEN IMAGE 3.25

CHAPTER 3.1.2 -- COMPACTION TESTS
SECTION 1.0 ---- OPTIONS

EXAMPLE:
Choosing "LABORATORY PROCTOR TEST" you will go to Chapter 3.1.2, Section 1.1 for the first prompting screen.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

COMPACTION TESTS

****
* (3.1.2-1.1) - LABORATORY PROCTOR TEST *
****

(3.1.2-1.2) - FIELD COMPACTION CHECK USING VOLUMETER METHOD

(3.1.2-1.3) - FIELD COMPACTION CHECK USING SAND CONE METHOD

(3.1.2-1.4) - COMPUTE FIVE POINT PROCTOR

(3.1.2-1.5) - PROCTOR DESIGN FILE TRANSACTIONS

- RETURN

OR AND THEN ENTER

SCREEN IMAGE 3.26

CHAPTER 3.1.2 -- COMPACTION TESTS
SECTION 1.1 ---- LABORATORY PROCTOR TESTS

All proctors using methods (A,C,& D) will be stored in a file exclusively attached to a specific project. This makes them totally unique within that project. Louisana Family of Curves (LFC) developed proctors reside in a COMMON FILE and can be used with any project.

This example is EXAMPLE #5 listed in the appendix.

EXAMPLE #5 EXAMPLE #5 EXAMPLE #5 EXAMPLE #5

The first screen will prompt you as shown in SCREEN IMAGE 3.27 Keying in the responses as requested will take you to the next screen shown in SCREEN IMAGE 3.28 which is the normal TABULATION LOGGING screen.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ROUTINE TO LOG PROCTORS

ENTER MATERIAL CODE SB
ENTER TYPE CODE (IF APP.) ..
ENTER PROCTOR NUMBER 2...
ENTER SPECIFICATION # 1
ENTER PERCENT COMPACTION SPECIFICATION (###) 95.
ENTER METHOD USED (A,C,D, or LFC) A..

PROCTOR TEST VALUES

ENTER O.D. SP. GR. (#.###) 2.51
ENTER PERCENT ABSORPTION (##.##) 1.53
ENTER PERCENT ROCK (##.#) 3.0
ENTER OPTIMUM MOISTURE (##.#) 14.6
ENTER MAXIMUM DRY DENSITY (###.#) 113.4

CONTINUE REENTER QUIT

SCREEN IMAGE 3.27

CHAPTER 3.1.2 -- COMPACTION TESTS
SECTION 1.1 ---- LABORATORY PROCTOR TESTS

After choosing to log Proctor, program will return to THE "COMPACTION TESTS MENU" for further instructions. This proctor will be used in any compaction tests that calls for it. The TEST # (2), in this example will be the PROCTOR SPEC # to be used when a compaction test is entered against the proctor.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

PROJ. CODE	MATL	TYPE	PUR	LAB	SPEC #	SIZE	SIZE %
1112	SB	..	P	P	1	.	A.

TEST #	SUFFIX	SAMPLED BY	DATE	TIME
2...	.	RD & AS.	080484	0915

LIFT #	SAMPLED FROM	RDWY	STATION
..	WB WINGWALL	WB	229+10.

P/E CODE	RDWY	STATION OR PIT #
.	WB	229+10.

LOG REMARKS CORRECTION QUIT

SCREEN IMAGE 3.28

CHAPTER 3.1.2 -- COMPACTION TESTS
SECTION 1.2 ---- FIELD COMPACTION CHECK (USING VOLUMETER METHOD)

Having chosen "FIELD COMPACTION TESTS-VOLUMETER" from your last menu, the computer will now proceed with prompting statements for which you are to respond with the correct information. The ... at the end of a request releases the keyboard for your response.

This example is EXAMPLE #6 listed in the appendix.

EXAMPLE #6 EXAMPLE #6 EXAMPLE #6 EXAMPLE #6

The first screen will prompt you as shown in SCREEN IMAGE 3.29 Keying in the responses as requested will take you to the next screen shown in SCREEN IMAGE 3.30.

```
ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE          PROJECT NUMBER          PROJECT NAME
    1112              IXF-084-(0)        ***** TEST PROJECT *****

                    COMPACTION TESTS
          FIELD COMPACTION CHECK (USING VOLUMETER METHOD)

   ENTER MATERIAL CODE  SB
   ENTER TYPE CODE (IF APP.)  ..
   ENTER PROCTOR NUMBER  2
   ENTER SPECIFICATION #  1
   ENTER METHOD USED   A..
```

SCREEN IMAGE 3.29

```
ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE          PROJECT NUMBER          PROJECT NAME
    1112              IXF-084-(0)        ***** TEST PROJECT *****

                    COMPACTION TESTS
          FIELD COMPACTION CHECK (USING VOLUMETER METHOD)

                       VALUES FOR PROCTOR

        PROCTOR WAS RUN AS A METHOD A

        OPTIMUM MOISTURE =  14.6
        MAXIMUM DENSITY =   113.4
        PERCENT ABSORPTION =  1.53
        SP.GR. RET. #4 =  2.51

              ARE THESE VALUES CORRECT?  Y=YES   N=NO
```

SCREEN IMAGE 3.30

CHAPTER 3.1.2 -- COMPACTION TESTS
SECTION 1.2 ---- FIELD COMPACTION CHECK (USING VOLUMETER METHOD)

Assuming our values are correct in SCREEN 3.30, we enter a "Y", and continue to SCREEN 3.31 which will prompt you for the information required. Completing the last entry, the next image is SCREEN 3.32 showing calulated results.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

COMPACTION TESTS
FIELD COMPACTION CHECK (USING VOLUMETER METHOD)

FIELD TEST DATA

ENTER TOTAL SAMPLE WT. (A) 10.11
ENTER WT. MATERIAL RET. #4 SIEVE (B) 2.50
ENTER PERCENT MOISTURE (D) 8.9
ENTER FINAL READING (F) .096
ENTER BEGINNING READING (G) .011

SCREEN IMAGE 3.31

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

COMPACTION TESTS
FIELD COMPACTION CHECK (USING VOLUMETER METHOD)

COMPACTION CHECK

PERCENT ROCK = 24.7
VOLUME = .085
WET DENSITY = 118.9
DRY DENSITY = 111.2
PERCENT COMP. = 92.5 %

WARNING: PERCENT COMPACTION IS NOT IN COMPLIANCE

LOG RECHECK NEW TEST QUIT

SCREEN IMAGE 3.32

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.2 -- COMPACTION TESTS
SECTION 1.2 ---- FIELD COMPACTION CHECK USING VOLUMETER METHOD

After choosing to log COMPACTION TEST, the program will prompt you for SAMPLE TABULATION information as shown in SCREEN 3.33.

NOTE: Be sure to complete SPEC # which is the same as the PROCTOR TEST # when the proctor was logged into the "DAILY MATERIAL FILE".

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

PROJ. CODE	MATL	TYPE	PUR	LAB	SPEC #	SIZE	SIZE %
1112	SB	..	V	P	1	.	A.

TEST #	SUFFIX	SAMPLED BY	DATE	TIME
16..	.	COTTOLEN.	080484	0915

LIFT #	SAMPLED FROM	RDWY	STATION
1.	BOT RET WALL BK.....	EB	229+25.

P/E CODE	RDWY	STATION OR PIT #
E	FR	229+25.

LOG REMARKS CORRECTION QUIT

SCREEN IMAGE 3.33

CHAPTER 3.1.2 -- COMPACTION TESTS
SECTION 1.3 ---- FIELD COMPACTION CHECK USING SAND CONE METHOD

Having chosen "FIELD COMPACTION TESTS-SAND CONE" from your last menu, the computer will now proceed with prompting statements for which you are to respond with the correct information. The _ or ... at the end of a request releases the keyboard for your response.

This example is EXAMPLE #7 listed in the appendix.

EXAMPLE #7 EXAMPLE #7 EXAMPLE #7 EXAMPLE #7

The first screen will prompt you as shown in SCREEN IMAGE 3.35 Keying in the responses as requested will take you to the next screen shown in SCREEN IMAGE 3.36

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

COMPACTION TESTS
FIELD COMPACTION CHECK (USING SANDCONE METHOD)

ENTER MATERIAL CODE EM
ENTER TYPE CODE (IF APP.) ..
ENTER PROCTOR NUMBER 1
ENTER SPECIFICATION # 1
ENTER METHOD USED A..

SCREEN IMAGE 3.35

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

COMPACTION TESTS
FIELD COMPACTION CHECK USING SANDCONE METHOD
VALUES FOR PROCTOR

PROCTOR WAS RUN AS A METHOD A

OPTIMUM MOISTURE = 10
MAXIMUM DENSITY = 124
PERCENT ABSORPTION = 1
SP.GR. RET. #4 = 2.61

ARE THESE VALUES CORRECT? 1=YES 2=NO

SCREEN IMAGE 3.36

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.2 -- COMPACTION TESTS
SECTION 1.3 ---- FIELD COMPACTION CHECK USING SAND CONE METHOD

After confirming the original proctor values shown in SCREEN IMAGE 3.36, the program will prompt you for the field test data as demonstrated in SCREEN IMAGE 3.37. Suppling the information requested, the next SCREEN IMAGE 3.38 will reflect all calculations. If you choose to log, the typical tabulation data will be requested represented by SCREEN IMAGE 3.39.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

FIELD TEST DATA

ENTER TOTAL SAMPLE WT. (A) 11.08
ENTER WT. MATERIAL RET. #4 SIEVE (B) 3.77
ENTER PERCENT MOISTURE (D) 8.7
ENTER WEIGHT OF SAND & CONTAINER BEFORE FILLING HOLE (F) 15.16
ENTER WEIGHT OF SAND & CONTAINER AFTER FILLING HOLE (G) 4.75
ENTER WEIGHT OF SAND TO FILL CONE (I) 3.55
ENTER DENSITY OF SAND (K) 83.8

SCREEN IMAGE 3.37

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

COMPACTION TESTS
FIELD COMPACTION CHECK (USING SANDCONE METHOD)

COMPACTION CHECK

PERCENT ROCK	=	34.0
VOLUME	=	.082
WET DENSITY	=	135.4
DRY DENSITY	=	127.6
PERCENT COMP.	=	96.9 %

LOG RECHECK NEW TEST QUIT

SCREEN IMAGE 3.38

CHAPTER 3.1.2 -- COMPACTION TESTS
SECTION 1.3 ---- FIELD COMPACTION CHECK USING SAND CONE METHOD

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

MATERIAL LOGGING ROUTINE

PROJ. CODE	MATL	TYPE	PUR	LAB	SPEC #	SIZE	METHOD
1112	EM	..	S	P	1	.	A.

TEST #	SUFFIX	SAMPLED BY	DATE	TIME
4...	.	KIRTOW..	061984	0715

LIFT #	SAMPLED FROM	RDWY	STATION
..	RAMP D 25' LT.....	EB	778+80.

P/E CODE	RDWY	STATION pr PIT #
E	EB	781+00.

LOG REMARKS CORRECTION QUIT

SCREEN IMAGE 3.39

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.2 -- COMPACTION TESTS
SECTION 1.4 ---- COMPUTE FIVE POINT PROCTOR

Having chosen "COMPUTE FIVE POINT PROCTOR" from your previous menu, the computer will now proceed with prompting statements for which you are to respond with the correct information. The .... at the end of a request releases the keyboard for your response.

This example is EXAMPLE #5 listed in the appendix.

EXAMPLE #5 EXAMPLE #5 EXAMPLE #5 EXAMPLE #5

The first screen will prompt you as shown in SCREEN IMAGE 3.40. Keying in the responses as requested will take you to the next SCREEN IMAGE 3.41 showing the calculated information.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

THIS PROGRAM CALCULATES AN OPTIMUM MOISTURE CONTENT
AND SOIL DENSITY GIVEN FOUR SETS OF PROCTOR DATA

FOR TEST NO. 1 ENTER MOISTURE CONTENT, SOIL DENSITY 14.4 113.6

FOR TEST NO. 2 ENTER MOISTURE CONTENT, SOIL DENSITY 12.4 110.5

FOR TEST NO. 3 ENTER MOISTURE CONTENT, SOIL DENSITY 15.0 113.0

FOR TEST NO. 4 ENTER MOISTURE CONTENT, SOIL DENSITY 16.8 110.0

SCREEN IMAGE 3.40

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

POLYNOMIAL EQUATION:

Y = 0.000(X 3) + -0.026(X 2) + 9.735(X) + 20.741

WHERE X = MOISTURE CONTENT
WHERE Y = SOIL DENSITY

OPTIMUM MOISTURE CONTENT = 14.6
SOIL DENSITY = 113.4

LOG QUIT

SCREEN IMAGE 3.41

CHAPTER 3.1.2 -- COMPACTION TESTS
SECTION 1.5 ---- PROCTOR DESIGN FILE TRANSACTIONS

Having chosen "PROCTOR DESIGN FILE TRANSACTIONS" from your previous menu, SCREEN IMAGE 3.43 appears and requests the PROCTOR METHOD USED (A,C,D, or LFC). All proctors, other than LFC reside in a file exclusively attached to a specific project. This makes them totally unique within that project. Louisana Family of Curves (LFC) developed proctors reside in a COMMON FILE and can be used with any project as needed.

After replying to the prompt, SCREEN IMAGE 3.45 will be displayed.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ENTER METHOD USED A..

SCREEN IMAGE 3.43

CHAPTER 3.1.2 -- COMPACTION TESTS
SECTION 1.5 ---- PROCTOR DESIGN FILE TRANSACTIONS

SCREEN IMAGE 3.45 displays all proctors associated specifically with the project. The proctors were written to this file at the same time they were written to the WEEKLY MATERIALS LOG as a TEST#.

That proctor TEST# is now defined as the PROC # associated within any unique combination of MAT CODE & TYPE CODE. This file is searched when any compaction tests are run.

The purpose of this procedure is to let you examine what is in the file and to be able to delete a PROCTOR RECORD when it is no longer needed.

If you key a "D", another prompting statement shown by line index (Z =====>) will appear. Keying the REC # associated with the proper PROC # will delete that proctor.

Pressing any other key during display of the proctor records will send you back to the previous menu.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

REC #	MAT CODE	TYPE CODE	PROC #	M	O.D. SP.G	%ABS	%RET #4	OPT MOI	MAX D -4	CORR DEN	COMP SPEC
1	SB		1	A	2.51	1.53	2.0	14.6	113.4	113.4	95
2	EM		1	A	2.38	1.15	22.2	13.8	115.4	119.9	95

D=DELETE RECORD PRESS ANY OTHER KEY TO RETURN

Z =====> ENTER RECORD NO. TO BE DELETED

SCREEN IMAGE 3.45

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.0 ---- OPTIONS

Having chosen "ASPHALTIC CONCRETE TESTS" from your previous menu, shown in SCREEN IMAGE 3.46, you have a NEW MENU with OPTIONS displayed in SCREEN IMAGE 3.47, asking for the type code of the asphaltic concrete you will be processing.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

MATERIAL CALCULATION ROUTINES

(3.1.1) SOILS AND AGGREGATE GRADATIONS

(3.1.2) COMPACTION TESTS

(3.1.3) ASPHALTIC CONCRETE TESTS

(3.1.4) COMPOSITE GRADATIONS

(3.1.5) SPECIFICATION TRANSACTIONS

RETURN

SCREEN IMAGE 3.46

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.0 ---- OPTIONS

By selecting "3/4 Inch Mix", your next menu exhibited in SCREEN IMAGE 3.48 will show the various options available. Choosing "EXTRACTIONS" you will go to Chapter 3.1.3, Section 1.1 for first prompting screen.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ASPHALTIC CONCRETE

SELECT TYPE CODE

****
* - 3/4 Inch Mix *
****
3/8 Inch Mix

1/2 Inch Mix

USE OR AND THEN ENTER

SCREEN IMAGE 3.47

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

ASPHALTIC CONCRETE
OPTIONS

****
* (3.1.3-1.1) - EXTRACTIONS *
****

(3.1.3-1.2) - A.C. GRADATIONS

(3.1.3-1.3) - VOIDS CALCULATIONS

(3.1.3-1.4) - BULK SP. GR. OF COMPACTED BITUMINOUS MIXTURES

(3.1.3-1.5) - LOCATIONS or COMPLIANCE OF AC LOTS

(3.1.3-1.6) - RANDOM TONNAGE FOR MA ACCEPTANCE

(3.1.3-1.7) - A.C. MIX DESIGN FILE TRANSACTIONS

(3.1.3-1.8) - HOLDING FILE TRANSACTIONS

USE OR AND THEN ENTER

SCREEN IMAGE 3.48

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.1 ---- EXTRACTIONS

Having chosen "EXTRACTIONS" from your previous menu, the computer will now proceed with prompting statements for which you are to respond with the correct information. The dots at the end of a request or prompt releases the keyboard for your response.

This example is EXAMPLE #8 listed in the appendix.

EXAMPLE #8 EXAMPLE #8 EXAMPLE #8 EXAMPLE #8

The first screen will prompt you as shown in SCREEN IMAGE 3.49. Keying in the responses as requested will take you to the next screen shown in SCREEN IMAGE 3.50.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ASPHALTIC CONCRETE

ENTER MIX DESIGN NUMBER TO BE USED 1 <====== SPEC #
ENTER PURPOSE A <====== DEFAULT PURPOSE

SCREEN IMAGE 3.49

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ASPHALTIC CONCRETE

ENTER WT. CELITE, FILTER & -#200'S (a) 178
ENTER WT. CELITE & FILTER (B) 115
ENTER DRY WT. OF EXTRACTED AGGREGATE (d) 2446
ENTER TRAP READING (f) 0.5
ENTER WT. OF MOISTURE SAMPLE (g) 500
ENTER INITIAL WT. OF A.C. SAMPLE (i) 2640

THEN USING THESE VALUES, PERCENT ASPHALT = 4.97 % 3 TEST AVG =4.95 %

RECHECK GRADATIONS VOIDS CORES LOG QUIT

SCREEN IMAGE 3.50

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.1 ---- EXTRACTIONS

Let us now choose to go on to "AC GRADATION" with this sample by keying in a "G" at the bottom of SCREEN IMAGE 3.50 This will take you to SCREEN IMAGE 3.51 requesting two pieces of information. Completing the entry, SCREEN IMAGE 3.52 will ask you for verification of calulated data. Keying a "G" will then move you to SCREEN IMAGE 3.53 prompting you for weights retained on all sieves.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

ASPHALTIC CONCRETE

ASPHALTIC CONCRETE GRADATIONS

ENTER O.D. SPLIT OF WT. OF -#4 (q) 728
ENTER DRY WT. PASSING #4 (r) 1414

SCREEN IMAGE 3.51

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ASPHALTIC CONCRETE GRADATIONS

CORRECTED -#4 WT. = 1477
CORRECTED TOTAL WT. = 2509
CORRECTED DRY WT. OF PASSING #4 SPLIT = 760

CONTINUE RECHECK VOIDS RETURN

SCREEN IMAGE 3.52

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.1 ---- EXTRACTIONS

Upon completing the entry of coarse screen information as shown in SCREEN IMAGE 3.53, the program will make the calculations as displayed in SCREEN IMAGE 3.54 By keying a "C", the program will move to SCREEN IMAGE 3.50 requesting fine sieves input data.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ASPHALTIC CONCRETE GRADATIONS

Sieve	Weight
1 1/2"	....
1"	....
3/4"	221.
1/2"	307.
3/8"	201.
1/4"	198.
#4	105.
-#4	1477

SCREEN IMAGE 3.53

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ASPHALTIC CONCRETE GRADATIONS

SIEVE	WEIGHT	% RET.	% PASS.	SPECIFICATION	3 TEST AVG.
1 1/2"	0	0	100		
1"	0	0	100		
3/4"	221	9	91		
1/2"	307	12	79		
3/8"	201	8	71		
1/4"	198	8	63		
#4	105	4			
-#4	1477		59	(58.9)	
TOTAL =	2509				

CONTINUE REENTER VOIDS LOG QUIT

SCREEN IMAGE 3.54

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.1 ---- EXTRACTIONS

Keying in the retained weights on the fine sieves as exhibited in SCREEN IMAGE 3.55 the next SCREEN IMAGE 3.56 will appear showing calculated data. Choosing to go on to "VOIDS ANALYSIS", you would key in a "V" to move to SCREEN IMAGE 3.57

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ASPHALTIC CONCRETE GRADATIONS

SIEVE	WEIGHT
#8	117
#10	...
#16	...
#30	...
#40	418
#50	...
#100	...
#200	177
-#200	...

SCREEN IMAGE 3.55

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.1 ---- EXTRACTIONS

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ASPHALTIC CONCRETE GRADATIONS

SIEVE	WEIGHT	% RET.	% PASS.	SPECIFICATIONS	3 TEST AVG.
#8	117	9	50		
#10	0	0	50		
#16	0	0	50		
#30	0	0	50		
#40	418	32	18		
#50	0	0	18		
#100	0	0	18		
#200	177	14			
-#200	0		3.7		
TOTAL =	712				
ELUT =	48				

REENTER VOIDS LOG QUIT

SCREEN IMAGE 3.56

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.1 ---- EXTRACTIONS

SCREEN IMAGE 3.57 contains a bounce bar menu that asks if you are going to use the design specific gravity or if you want the program to calculate a new one. We have chosen to use the design specific gravity. After entering the AC Mix Dry Bulk Specific Gravity, the calculations are then exhibited in SCREEN IMAGE 3.58. If, after examining the data, you opt for a recheck, SCREEN IMAGE 3.57 will reappear. Upon completion of 3.58 SCREEN, we will now log the entire sample containing 'EXTRACTION', 'GRADATION', & 'VOIDS ANALYSIS', by entering an "L" and bringing up SCREEN IMAGE 3.59 which is the typical TABULATION SCREEN.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

VOIDS ANALYSIS

CALCULATE VOIDS USING: *- DESIGN COMBINED SP. GR. *
- CAL. COMBINED SP. GR.

ENTER AC Mix Dry Bulk Sp. Gr. (Gmb) 2.286
ENTER Corrected Marshall Stability _
ENTER Marshall Flow Reading _

SCREEN IMAGE 3.57

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

VOIDS ANALYSIS

Combined Sp.Gr. Used = 2.566

Voids in Mineral Agg. = 15.6	3 TEST AVG. = 15.5	
Effective Voids = 5.7		5.7
Voids Filled = 63.4		63.3
Calculated Rice Test = 2.286		
Sample Maximun Density = 142.4		
AC Mix Bulk Density = 142.4		142.4

GRADATIONS RECHECK LOG QUIT

SCREEN IMAGE 3.58

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.1 ---- EXTRACTIONS

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

PROJ. CODE	MATL	TYPE	PUR	LAB	SPEC #	SIZE	SIZE %
1112	AC	34	A	P	1	.	..

TEST #	SUFFIX	SAMPLED BY	DATE	TIME
14..	.	LAGUNA..	072683	1125

LIFT #	SAMPLED FROM	RDWY	STATION
2.	LEFT TURN BAY.....	EB	102+85.

P/E CODE	RDWY	STATION or PIT #
P	..	COLUMB.

LOG REMARKS HOLD CORRECTION QUIT

SCREEN IMAGE 3.59

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.2 ---- A.C. GRADATIONS

Having chosen "AC GRADATIONS" from your previous menu, the computer will now proceed with prompting statements for which you are to respond with the correct information. The ? or... at the end of a request releases the keyboard for your response.

This example is EXAMPLE #8 listed in the appendix.

EXAMPLE #8 EXAMPLE #8 EXAMPLE #8 EXAMPLE #8

The first screen will prompt you as shown in SCREEN IMAGE 3.60 . Keying in the necessary extraction data as required, SCREEN IMAGE 3.61 will appear showing corrected weights of sample for gradation.
From this point the program will repeat itself as explained in Chapter 3.1.3, Section 1.1 starting with SCREEN IMAGE 3.53 .

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ASPHALTIC CONCRETE

ASPHALTIC CONCRETE GRADATIONS

ENTER O.D. SPLIT WT. OF -#4 (q) 728
ENTER DRY WT. PASSING#4 (r) 1414
ENTER WT. OF -#200'S (c) 63
ENTER DRY WT. OF EXTRACTED AGGREGATE (d) 2446

SCREEN IMAGE 3.60

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ASPHALTIC CONCRETE GRADATIONS

CORRECTED -#4 WT. = 1477
CORRECTED TOTAL WT. = 2509
CORRECTED DRY WT. OF PASSING #4 SPLIT = 760

CONTINUE RECHECK VOIDS QUIT

SCREEN IMAGE 3.61

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.3 ---- VOIDS CALCULATIONS

Having chosen "VOIDS CALCULATIONS" from your previous menu, the program will now proceed with prompting statements for which you are to respond with the correct information. The ? OR ... at the end of a request releases the keyboard for your response.

This example is EXAMPLE #8 listed in the appendix.

EXAMPLE #8 EXAMPLE #8 EXAMPLE #8 EXAMPLE #8

The first screen will prompt you as shown in SCREEN IMAGE 3.65 for the Mix Design Number and will move to SCREEN IMAGE 3.66 for specific information as exhibited.

From this point the program will repeat itself as explained in Chapter 3.1.3, Section 1.1 starting with SCREEN IMAGE 3.58 .

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ASPHALTIC CONCRETE

ENTER MIX DESIGN NUMBER TO BE USED 1

SCREEN IMAGE 3.65

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

VOIDS ANALYSIS

CALCULATE VOIDS USING:
****
*- DESIGN COMBINED SP. GR. *
****
- CAL. COMBINED SP. GR.

ENTER AC Mix Dry Bulk Sp. Gr. (Gmb) 2.286
ENTER Percent Passing #4 (Pf) 59
ENTER Percent Asphalt (p) 4.97
ENTER Corrected Marshall Stability _
ENTER Marshall Flow Reading _

SCREEN IMAGE 3.66

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.4 ---- BULK SP. GR. OF COMPACTED BITUMINOUS MIXTURES

Having chosen "BULK SP. GR. OF COMPACTED BITUMINOUS MIXTURES" from the previous menu, the program will now print a screen image of the form on the back of the asphalt concrete workcard. Fill in the blanks as needed. If the stability and flow are not to be calculated then do not fill in the line labeled SPECIMEN HEIGHTS and the program will skip those calculations. Specimen Heights should be between 1.9 inches and 3 inches, otherwise, a message is printed stating you are out of range. This message also appears if the Stability Table is missing. When all three columns have been filled in, averages will be calculated and printed on the screen. If you go on to VOIDS these will be kept in memory and saved to the test record.

This example is EXAMPLE #8 listed in the appendix.

EXAMPLE #8 EXAMPLE #8 EXAMPLE #8 EXAMPLE #8

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

BULK SPECIFIC GRAVITY OF COMPACTED BITUMINOUS MIXTURES

SPECIMEN HEIGHTS	2.693.	2.699.	2.703	
A mass of sample in air	1163.8	1165.9	1164.8	
B mass of SSD sample in air	1164.6	1165.7	1165.7	
C mass of sample in water	651.2.	658.7.	657.4.	
Bulk Specific Gravity	2.267.	2.3...	2.292.	Average = 2.286
Marshall Stability Reading	4450..	4600..	4140..	
Corrected Marshall Stability	3960..	4048..	3643..	Average = 3884.
Marshall Flow Reading	8.....	8.....	8.....	Average = 8....

VOIDS REENTER QUIT

SCREEN IMAGE 3.68

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.5 ---- LOCATIONS OR COMPLIANCE OF AC LOTS

Having chosen "LOCATIONS OR COMPLIANCE OF AC LOTS" from your previous menu, the Bounce Bar Menu as shown in SCREEN IMAGE 3.70 requests you to choose one of the selections. By selecting "RANDOM LOCATIONS", the program will exhibit SCREEN IMAGE 3.71.

***** RANDOM LOCATIONS OF AC LOTS *****

This procedure is primarily used to prepare RANDOM LOCATIONS for AC ACCEPTANCE samples as well as save the information for future recording of the NUCULAR DENSITY data.

This example is EXAMPLE #9 listed in the appendix.

EXAMPLE #9 EXAMPLE #9 EXAMPLE #9 EXAMPLE #9

The second screen will prompt you as shown in SCREEN IMAGE 3.71 for information to allow the program to calculate test locations and other data. This data is then printed to allow Eng. Technicians a field work sheet showing test locations for NUCULAR DENSITIES. This work sheet is reproduced as part of EXAMPLE 9.

***** ADOT ASPHALTIC CONCRETE LOT ACCEPTANCE UTILITY PROGRAM *****

PROJECT # = IXF-084-1(0) NAME = ***** TEST PROJECT *****
RE/SUPERVISOR = MR T CONTRACTOR = LIGHTNING CONSTRUCTION

ASPHALT CONCRETE LOT ACCEPTANCE

****
* RANDOM LOCATIONS FOR LOT ACCEPTANCE *
****

CALCULATION CHECK and LOGGING OF LOT ACCEPTANCE

LIST LOT ACCEPTANCE RECORDS

RETURN

SCREEN IMAGE 3.70

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.5 ---- LOCATIONS OR COMPLIANCE OF AC LOTS

***** RANDOM LOCATIONS OF AC LOTS *****

As displayed in SCREEN IMAGE 3.71, the program will prompt you for specific items. Lot #, NO of AREAS, AVE. M/DEN, DSGN #, and AC correction factor must be completed to insure proper calculations. Considering the data to be correct and keying a "C", SCREEN IMAGE 3.72 prompts you for additional data associated with location, width, thickness and direction/distance to Construction Center Line. The screen also prompts you for a "Status of Edge" as indicated by indexes X ======> and Y ======>. Upon keying a 'U' or 'C' for the left edge, line X is replaced by line Y. Keying an "L", the program will log all data and print random location report.

***** ADOT ASPHALTIC CONCRETE LOT ACCEPTANCE UTILITY PROGRAM *****

PROJECT # = IXF-084(0) NAME = ***** TEST PROJECT *****
RE/SUPERVISOR = MR T CONTRACTOR = LIGHTNING CONSTRUCTION

RANDOM LOCATIONS FOR AC LOT ACCEPTANCE

PROJ. CODE	MATERIAL CODE	TYPE CODE	PURPOSE CODE	LAB CODE	
1112	AC	34	A	P	
LOT #	SUFFIX	NO. AREAS	DATE (MMDDYY)	TIME (HH.MM)	TESTED BY
3..	..	1	080184	17.29	DWP.....
SOURCE AGG #1	SOURCE AGG #2	SOURCE ASPH.	AVE M/DEN	DSGN #	CORRECTION FACTOR
			144.1	1	2.9..

CONTINUE REENTER QUIT

SCREEN IMAGE 3.71

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.5 ---- LOCATIONS OR COMPLIANCE OF AC LOTS

***** RANDOM LOCATIONS OF AC LOTS *****

***** ADOT ASPHALTIC CONCRETE LOT ACCEPTANCE UTILITY PROGRAM *****

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

SECTIONS COVERED BY LOT # 3

SEC #	LIFT #	RDWY	B/STATION (#####.##)	E/STATION (#####.##)	MAT WIDTH	MAT DEPTH	DIR	DISTANCE C/L to C/L
1	1	EB	95.50...	107.50..	10..	3...	LT	16..

X ======> STATUS OF LT. EDGE-- U=UNCONFINED C=CONFINED
Y ======> STATUS OF RT. EDGE-- U=UNCONFINED C=CONFINED

CONTINUE REENTER QUIT

SCREEN IMAGE 3.72

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.5 ---- LOCATIONS OR COMPLIANCE OF AC LOTS

***** COMPLIANCE OF AC LOTS *****

Selecting "CALCULATION CHECK and LOGGING of LOT ACCEPTANCE", the program first requests the LOT #, SUFFIX and METHOD used. Lot # & Suffix are the same you established in "RANDOM LOCATION of AC LOTS". The Method selections are (1=Back Scatter Count), (2=Wet Densities), & (3=Cores). For this example we will use WET DENSITIES. If a "RANDOM LOCATION of AC LOTS" was not previously entered, the program will allow you to advance no farther. Entering the data, SCREEN IMAGE 3.73 appears and begins prompting you for data primarily associated with the NUCULAR GAUGE. You may change any data as the CURSOR moves through each data item field. Upon entering "C" (continue), SCREEN IMAGE 3.74 is exhibited.

**** ADOT ASPHALTIC CONCRETE LOT ACCEPTANCE UTILITY PROGRAM *****

PROJECT # = IXF-084-1(0) NAME = ***** TEST PROJECT *****
RE/SUPERVISOR = MR T CONTRACTOR = LIGHTNING CONSTRUCTION

ASPHALTIC CONCRETE LOT COMPLIANCE

GUAGE S/NUMBER	DAILY STANDARD COUNT	CORRECTION FACTOR	AVE M/DEN	TESTED BY
7079	2826	2.9..	144.1	DWP

CONTINUE REENTER QUIT

SCREEN IMAGE 3.73

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.5 ---- LOCATIONS OR COMPLIANCE OF AC LOTS

****** COMPLIANCE OF AC LOTS ******

SCREEN IMAGE 3.74 begins prompting you as you move the CURSOR through the data fields. Much of the data is provided from the record made when random locations were run. Here again, you may change any of the data as the CURSOR addresses each field. Skipping a TEST # is accomplished by pressing enter key with no entry made in first field (W/DENSITY READINGS). A message is displayed at that time to insure this is what you wish to do. Upon completing last entry, PERCENT OF COMPLIANCE FOR LOT is calc lated and PRINTED. Choosing to log test, as shown by Line Index X ==:::==>, the record will be logged and Line Index Y ======> will prompt you as displayed (SCREEN or PRINTER). If you choose to PRINT, the report as exhibited in SCREEN IMAGE 3.75 will be sent to the printer.

**** ADOT ASPHALTIC CONCRETE LOT ACCEPTANCE UTILITY PROGRAM *****

PROJECT # = IXF-084-1(0) NAME = ***** TEST PROJECT *****
RE/SUPERVISOR = MR T CONTRACTOR = LIGHTNING CONSTRUCTION

ASPHALTIC CONCRETE LOT COMPLIANCE

LOT # 1 SUFFIX = TEST VALUES FOR SECTION # 2

TEST #	STATION	OFFSET	(W/DENSITY READINGS)		C/DEN.	M/DEN.	% COMP.
1	97+69..	-12.1.	138.6	137.0	140.1	144.1	97.6
2	98+59..	-10.6.	134.9	134.2	137.5	144.1	95.4
3	100+38.	-17.5.	134.8	135.0	137.8	144.1	95.6
4	103+82.	-11.3.	137.6	137.6	140.5	144.1	97.5
5	104+81.	-11.2.	.....	.....	.....	.....	....
VALUE WAS SKIPPED		CONTINUE		REENTER			
6	104+85.	-14.7.	134.3	131.6	135.9	144.1	94.3
7	105+35.	-14.3.	138.0	134.7	139.3	144.1	96.7
8	106+13.	-16.8.	137.0	135.7	139.3	144.1	96.7

THE PERCENT OF COMPLIANCE FOR THIS LOT IS 86 %

LOT IS WITHIN SPECIFICATION FOR % COMPLIANCE

X =====> LOG REMARKS PRINT CHECK QUIT
Y =====> SCREEN PRINTER

SCREEN IMAGE 3.74

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.5 ---- LOCATIONS OR COMPLIANCE OF AC LOTS

****** COMPLIANCE OF AC LOTS ******

ASPHALTIC CONCRETE LOT ACCEPTANCE

PROJECT # IXF-084-(0) NAME = ***** TEST PROJECT *****
RE/SUPERVISOR: MR T CONTRACTOR: LIGHTING CONSTRUCTION

LOT # = 1 DATE = 071684 TIME = 12:59 GAUGE NO = 7079

TEST RESULTS FOR SECTION # 1

TEST #	STATION	OFFSET	F/DENSITY	COR/DENSITY	MAX/DENSITY	% COMP.
1	97+69	-12.1	137.8	140.7	144.1	97.6
2	98+59	-10.6	134.6	137.5	144.1	95.4
3	100+38	-17.5	134.9	137.8	144.1	95.6
4	103+82	-11.3	137.6	140.5	144.1	97.5
6	104+85	-14.7	136.4	139.3	144.1	96.7
7	105+35	-14.3	136.4	139.3	144.1	96.7
8	106+13	-16.8	132.9	135.9	144.1	94.3

BEGINNING STA. = 95+50 ENDING STA. = 075+50
AREA IN SECTION = 1333 SQ. YD. APX. TONNAGE = 216 TONS
MAT WIDTH = 10.0 FT MAT DEPTH = 3.00 INCHES
PLACED IN EB RDWAY, 1 st. LIFT, C/L OF MAT IS 16.0 FT. LT. OF RDWAY C/L

APX. TONS OF A.C. REPRESENTED BY THIS LOT IS 216.15 TONS

% COMPLIANCE = 86 AVE. % COMPACTION = 96.3 S/DEV. = 1.21

LOT IS IN SPECIFICATION FOR PERCENT COMPLIANCE

TESTED BY _____ PROJECT LABMAN _____ RE/SUP. _____

RECEIVED BY _____ DATE _____

SCREEN IMAGE 3.75

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.6 ---- RANDOM TONNAGE FOR MA ACCEPTANCE

Having chosen "RANDOM TONNAGE FOR MA ACCEPTANCE" from the previous menu, SCREEN IMAGE 3.80 requests one item of information to RANDOMIZE TONNAGE selections. EXAMPLE #12 is a sample of the PRINTOUT you would receive by simply pressing the ENTER KEY and letting the program default to 7 numbers ranging from 1 to 3500 tons (within 500 ton lots).

This example is EXAMPLE #12 listed in the appendix.

EXAMPLE #12 EXAMPLE #12 EXAMPLE #12 EXAMPLE #12

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM.

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ASPHALTIC CONCRETE

RANDOM TONNAGE NUMBERS FOR MA ACCEPTANCE

ENTER APX. TONS FOR DAY'S PRODUCTION (DEFAULT = 7 NUMBERS)?

SCREEN IMAGE 3.80

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.7 ---- A.C. MIX DESIGN TRANSACTIONS

Having chosen "A.C. MIX DESIGN TRANSACTIONS" from your previous menu, SCREEN IMAGE 3.81 presents you with another menu having two choices. Let us first look at "CREATE AC MIX DESIGN RECORD", causing SCREEN IMAGE 3.82 to appear.

***** PROJECT MIX DESIGN FILE TRANSACTIONS *****

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

****
* - CREATE AC MIX DESIGN RECORD *
****
- LIST DESIGN DATA

- RETURN

USE OR AND THEN ENTER

SCREEN IMAGE 3.81

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.7 ---- A.C. MIX DESIGN TRANSACTIONS

Selecting "CREATE MIX DESIGN RECORD", SCREEN IMAGE 3.82 requests the required data the program needs to make a permanent record of a a specific MIX DESIGN. This information will be retrieved each time an asphalt test is entered into the machine. Upon completing the last data item entry, SCREEN IMAGE 3.83 will display the DESIGN VALUES and requests your verification as to their accuracy. Keying an 'L' will LOG the MIX DESIGN. You may review all the MIX DESIGNS by selecting "LIST DESIGN DATA" from previous menu. This example is EXAMPLE #8 listed in appendix A.

EXAMPLE #8 EXAMPLE #8 EXAMPLE #8 EXAMPLE #8

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ENTER MIX DESIGN NUMBER ? 1

DATA INPUT ROUTINE (TO SKIP A VALUE, PRESS <enter>)
ENTER PERCENT ABORBED ASPHALT (Pba) ? .58
ENTER DESIGN SP.GR. OF ASPHALT (Gb) ? 1.0208
ENTER COARSE AGG. SP. GR. (Gc) ? 2.554
ENTER FINE AGG. SP. GR. (Gf) ? 2.574
ENTER TYPE OF ADMIXTURE (1=Lime,2=Cement,3=1P Cement) ? 2
ENTER PERCENT OF ADMIXTURE (Pad) ? 2.0
ENTER COMB. AGG. BULK O.D. SP.GR. (Gsb) ? 2.566
ENTER MAX THEORETICAL DENSITY ? 151.0
ENTER PROJECT DETERMINED RENTENTION FACTOR (O) ? .12

SCREEN IMAGE 3.82

DESIGN VALUES ENTERED

ABSORBED ASPHALT = .58
SP.GR. OF ASPHALT = 1.0208
SP.GR. OF C/AGG = 2.554
SP.GR. OF F/AGG = 2.574
TYPE OF M/ADMIX = CEMENT
% OF MINERAL ADMIX= 2
COMBINED SP.GR. = 2.566
MAX THEORETICAL DENSITY = 151
PROJ. RET/FACTOR = .12

LOG REENTER QUIT

SCREEN IMAGE 3.83

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.7 ---- A.C. MIX DESIGN TRANSACTIONS

Having chosen "LIST DESIGN DATA" from previous menu, SCREEN IMAGE 3.84 appears and dislays all PROJECT MIX DESIGNS that have been entered into the file.

The purpose of this procedure is to let you examine what is in the file and to be able to delete a MIX DESIGN when it is no longer needed.

If you key a "D", another prompting statement shown by line index (Z =====>) will appear. Keying the REC # associated with the proper DES # will delete that MIX DESIGN.

Pressing ENTER key during display of either of the prompting statements will send you back to the previous menu.

***** PROJECT MIX DESIGN FILE TRANSACTIONS *****

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

REC #	DES #	TY	%ABS ASPH	SPECIFIC GRAVITY ASPH	CA	FA	COMB	ADM %	ADM TYPE	MAX T DEN	RET FAC
1	3	12	.58	1.031	2.562	2.584	2.576	2	2	153.4	.12
2	1	38	.54	1.021	2.554	2.574	2.566	2	2	152.7	.12
3	2	34	.76	1.041	2.564	2.557	2.578	2	2	151	.12

D=DELETE A RECORD PRESS ANY OTHER KEY TO RETURN

Z =======> ENTER RECORD NO. TO BE DELETED

SCREEN IMAGE 3.84

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.8 ---- HOLDING FILE TRANSACTIONS

The Holding File stores tests that are partially completed. The program assumes that Extractions will be done first; therefore, once this part of the test is entered, the user may at any time, select "LOG" and move to the logging screen where the "HOLD" option may be selected placing the test in the Holding File. He may at any time thereafter select "HOLDING FILE TRANSACTIONS" on the menu and recover that test by first, selecting the next portion of the test to be completed, COARSE SEIVES, FINE SEIVES, or VOIDS, and then completing the information requested in SCREEN IMAGE 3.85 to identify which test is wanted. The program will then bring into memory that test, if found, and delete it from the holdin file. The user is then free to complete as many parts of the test as are available and then either store it back into the holding file or log the test to the Daily File. If for any reason after calling up a test from the holding file the user should change his mind about entering data he should be sure and save it, either back to the holding file or log it, otherwise, it will be lost.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

MATERIAL CODE AC

TYPE CODE 34

SPEC # .

SIZE .

TEST # ....

SUFFIX ..

SCREEN IMAGE 3.85

CHAPTER 3.1.3 -- ASPHALTIC CONCRETE TESTS
SECTION 1.8 ---- HOLDING FILE TRANSACTIONS

The list option of HOLDING FILE TRANSACTIONS lists all tests in the holding file and gives the status of each. The status is indicated under the column headed PARTS COMPLETED. If a part of the test has been completed the program will indicate this by listing the first letter of the part completed. An "E" means extractions have been entered. A "C" means Coarse Sieves have been entered. An "F" means Fine Sieves have been entered and a "V" means Voids have been completed.

ADOT MATERIALS PROGRAM SAMPLE TEST LISTING

PROJECT MATERIAL TEST SUMMARY FOR 03-31-1986

REC #	MATERIAL CODE	PUR	TYPE CODE	SIZE CODE	SPEC #	TEST #	PARTS COMPLETED
1	AC	A	34		1	1	E C

CONTINUE DELETE

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.4 -- COMPOSITE GRADATIONS
SECTION 1.0 ---- OPTIONS

Having chosen " COMPOSITE GRADATIONS " from previous menu shown in SCREEN IMAGE 3.87 , you have a NEW MENU with OPTIONS displayed in SCREEN IMAGE 3.88 . Let us choose "COMPUTE COMPOSITE KEYING PERCENTS RETAINED" and move to SCREEN IMAGE 3.89 . Both procedures using either PERCENTS RETAINED or PERCENTS PASSING are totaly alike after initial input. I would suggest using PERCENTS RETAINED when possible as it is much easier to address those sieves desired than to key in EVERY SIEVE down to 0 % passing in the PERCENTS PASSSING input mode. Each BIN gradation addresses sieves from 3" to -200.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

MATERIAL CALCULATION ROUTINES

(3.1.1) SOILS AND AGGREGATE GRADATIONS

(3.1.2) COMPACTION TESTS

(3.1.3) ASPHALTIC CONCRETE TESTS

****
* (3.1.4) COMPOSITE GRADATIONS *
****

(3.1.5) SPECIFICATION TRANSACTIONS

RETURN

SCREEN IMAGE 3.87

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.4 -- COMPOSITE GRADATIONS
SECTION 1.1 ---- COMPUTE COMPOSITE KEYING PERCENTS RETAINED

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

COMPOSITE PROGRAM OPTIONS

****
* (3.1.4-1.1) - COMPUTE COMPOSITE KEYING PERCENTS RETAINED *
****

(3.1.4-1.2) - COMPUTE COMPOSTIE KEYING PERCENTS PASSING

(3.1.4-1.3) - COMPUTE COMPOSITE KEYING WEIGHTS RETAINED

(3.1.4-1.4) - COMPUTE COMPOSITE KEYING WEIGHTS PASSING

(3.1.4-1.5) - COMPUTE COMPOSITE USING STORED TESTS

(3.1.4-1.6) - JMFIT PROGRAM

- RETURN

SCREEN IMAGE 3.88

CHAPTER 3.1.4 -- COMPUTE A COMPOSITE GRADATION
SECTION 1.1 ---- COMPUTE COMPOSITE KEYING PERCENTS RETAINED

SCREEN IMAGE 3.89 prompts you for MATERIAL CODE, TYPE, SPEC #, NO. of BINS and PERCENT ADMIX. Responding with the entries as exhibited, SCREEN IMAGE 3.90 will further prompt you. After entering BIN #1 % and the percents retained for each sieve, the program will ask you if the values are correct "C" or reenter "R". Choosing an "R" will cause the program to start over with this screen. Choosing a "C", the program will continue to BIN #2 and prompt you for the same sieve numbers % retained. I am only going to show you BIN #1 input screen. After completing BIN #2,3,&4 input, SCREEN IMAGE 3.91 will appear with a recap of all information keyed and the composite sieves % RET and % PASS. "P" will send the screen to your printer. "B" will bring up a new screen for you to reasign BIN PERCENTAGES and recalculate. "J" will give you the opportunity to execute a BIN OPTIMIZER procedure named JIMFIT. This procedure is explained in SECTION 1.6.

NOTE: A MAXIMUM OF 5 BINS MAY BE USED.

This example is EXAMPLE #18 listed in the appendix, and is taken from ADOT MATERIALS TESTING MANUAL / COMPOSITE GRADING, FIGURE 2

EXAMPLE #18 EXAMPLE #18 EXAMPLE #18 EXAMPLE #18

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ENTER MATERIAL CODE AB
ENTER TYPE CODE ..
ENTER SPEC # 1
ENTER NUMBER OF BINS BEING USED 4
IF APP., ENTER % CEMENT OR LIME BEING USED ..

SCREEN IMAGE 3.89

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.4 -- COMPOSITE GRADATIONS
SECTION 1.1 ---- COMPUTE COMPOSITE USING PERCENTS RETAINED

NOTE: Each sieve will require you to either enter the data or if no data to PRESS ENTER KEY to advance to next sieve. This is required for every sieve from the #3" to the -#200.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ENTER PERCENT BEING USED FROM BIN # 1 23
FOR BIN # 1 , ENTER THE PERCENTS RETAINED

3"	
2 1/2"	
2"	
1 1/2"	
1"	
3/4"	
1/2"	55
3/8"	40
1/4"	4
#4	1
#8	
#10	
#16	
#30	
#40	
#50	
#100	
#200	
-#200	

CONTINUE REENTER

SCREEN IMAGE 3.90

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.4 -- COMPOSITE GRADATIONS
SECTION 1.1 ---- COMPUTE COMPOSITE KEYING PERCENTS RETAINED

COMPOSITE GRADATION

PROPORTIONS =	23	20	27	30	0	ADMIX	COMPOSITE % RET	COMPOSITE % PASS	JMF
3/4"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	
1/2"	55.5	0.0	0.0	0.0	0.0	0.0	12.6	87.0	
3/8"	40.0	10.0	0.0	0.0	0.0	0.0	11.2	76.0	
1/4"	4.0	48.0	1.0	0.0	0.0	0.0	10.8	65.0	
#4	1.0	27.0	9.0	0.0	0.0	0.0	8.0	57.0	
#8	0.0	12.0	30.0	4.0	0.0	0.0	11.7	45.0	
#10	0.0	1.0	10.0	1.0	0.0	0.0	3.2	42.0	
#16	0.0	1.0	19.0	6.0	0.0	0.0	7.1	35.0	
#30	0.0	0.0	12.0	17.0	0.0	0.0	8.3	27.0	
#40	0.0	0.0	3.0	18.0	0.0	0.0	6.2	21.0	
#50	0.0	0.0	3.0	21.0	0.0	0.0	7.1	14.0	
#100	0.0	0.0	4.0	23.0	0.0	0.0	8.0	6.0	
#200	0.0	0.0	2.0	7.0	0.0	0.0	2.6	3.1	
-#200	0.0	0.8	6.9	3.3	0.0	0.0	3.1	0.0	

LOG PRINT BIN % JMF QUIT

SCREEN IMAGE 3.91

CHAPTER 3.1.4 -- COMPUTE A COMPOSITE GRADATION
SECTION 1.2 ---- COMPUTE COMPOSITE KEYING PERCENTS PASSING

SCREEN IMAGE 3.92 prompts you for MATERIAL CODE, TYPE, SPEC #, NO. of BINS and PERCENT ADMIX. Responding with the entries as exhibited, SCREEN IMAGE 3.93 will further prompt you. After entering BIN #1 % and the percents passing for each sieve, the program will ask you if the values are correct "C" or reenter "R". Choosing an "R" will cause the program to start over with this screen. Choosing a "C", the program will continue to BIN #2 and prompt you for the same sieve numbers % passing. I am only going to show you BIN #1 input screen. After completing BIN #2,3,&4 input, SCREEN IMAGE 3.94 will appear with a recap of all information keyed and the composite sieves % RET and % PASS. "P" will send the screen to your printer. "B" will bring up a new screen for you to reasign BIN PERCENTAGES and recalculate. "J" will give you the opportunity to execute a BIN OPTIMIZER procedure named JIMFIT. This procedure is explained in SECTION 1.6.

NOTE: A MAXIMUM OF 5 BINS MAY BE USED.

This example is EXAMPLE #19 listed in the appendix, and is taken from ADOT MATERIALS TESTING MANUAL / COMPOSITE GRADING, FIGURE 3

EXAMPLE #19 EXAMPLE #19 EXAMPLE #19 EXAMPLE #19

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ENTER MATERIAL CODE AB
ENTER TYPE CODE ..
ENTER SPEC # 1
ENTER NUMBER OF BINS BEING USED 4
IF APP., ENTER % CEMENT OR LIME BEING USED ..

SCREEN IMAGE 3.92

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.4 -- COMPOSITE GRADATIONS
SECTION 1.2 ---- COMPUTE COMPOSITE KEYING PERCENTS PASSING

NOTE: Each sieve will require you to enter 100 down to the first sieve for which there is data. All sieves have to be addressed. If there is no data, the previous sieve value must be keyed down to a sieve for which data values are known. If all percentages have been covered and additional sieves are to be addressed, simply press enter key for all remaining sieves.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ENTER PERCENT BEING USED FROM BIN # 1 23
FOR BIN # 1 , ENTER THE PERCENTS PASSING

3"	100
2 1/2"	100
2"	100
1 1/2"	100
1"	100
3/4"	100
1/2"	45
3/8"	5
1/4"	1
#4	
#8	
#10	
#16	
#30	
#40	
#50	
#100	
#200	
-#200	

CONTINUE REENTER

SCREEN IMAGE 3.93

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.4 -- COMPOSITE GRADATIONS
SECTION 1.2 ---- COMPUTE COMPOSITE KEYING PERCENTS PASSING

COMPOSITE GRADATION

PROPORTIONS =	23	20	27	30	0	ADMIX	COMPOSITE % RET	COMPOSITE % PASS	JMF
3/4"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	
1/2"	55.5	0.0	0.0	0.0	0.0	0.0	12.6	87.0	
3/8"	40.0	10.0	0.0	0.0	0.0	0.0	11.2	76.0	
1/4"	4.0	48.0	1.0	0.0	0.0	0.0	10.8	65.0	
#4	1.0	27.0	9.0	0.0	0.0	0.0	8.0	57.0	
#8	0.0	12.0	30.0	4.0	0.0	0.0	11.7	45.0	
#10	0.0	1.0	10.0	1.0	0.0	0.0	3.2	42.0	
#16	0.0	1.0	19.0	6.0	0.0	0.0	7.1	35.0	
#30	0.0	0.0	12.0	17.0	0.0	0.0	8.3	27.0	
#40	0.0	0.0	3.0	18.0	0.0	0.0	6.2	21.0	
#50	0.0	0.0	3.0	21.0	0.0	0.0	7.1	14.0	
#100	0.0	0.0	4.0	23.0	0.0	0.0	8.0	6.0	
#200	0.0	0.0	2.0	7.0	0.0	0.0	2.6	3.1	
-#200	0.0	0.8	6.9	3.3	0.0	0.0	3.1	0.0	

LOG PRINT BIN % JMF QUIT

SCREEN IMAGE 3.94

CHAPTER 3.1.4 -- COMPUTE A COMPOSITE GRADATION
SECTION 1.3 ---- COMPUTE COMPOSITE KEYING WEIGHTS RETAINED

SCREEN IMAGE 3.95 prompts you for MATERIAL CODE, TYPE, SPEC #, NO. of BINS and PERCENT ADMIX. Responding with the entries as exhibited, SCREEN IMAGE 3.96 will further prompt you for total sample weight and percent used from Bin # 1. The screen will clear these two items and prompt you for each sieve weight. Upon completion of entering the weights retained for each sieve, the program will ask you if the values are correct "C" or reenter "R". Choosing an "R" will cause the program to start over with this screen. Choosing a "C", the program will then prompt you for the SPLIT SAMPLE WEIGHT, and continue with prompts starting with the #8 screen. If there is no fine screens to consider, press ENTER KEY and the program will continue to BIN #2 and prompt you for the same information as before. I am only going to show you BIN # 1 input screens.
After completing BIN #2,3,&4 input, SCREEN IMAGE 3.97 will appear with a recap of sieve percents retained and the composite sieves % RET and % PASS. "P" will send the screen to your printer. "B" will bring up a new screen for you to reasign BIN PERCENTAGES and recalculate. "J" will give you the opportunity to execute a BIN OPTIMIZER procedure named JIMFIT. This procedure is explained in SECTION 1.6.

NOTE: A MAXIMUM OF 5 BINS MAY BE USED.

This example is EXAMPLE #18 listed in the appendix, and is taken from ADOT MATERIALS TESTING MANUAL / COMPOSITE GRADING, FIGURE 1 & 2

EXAMPLE #18 EXAMPLE #18 EXAMPLE #18 EXAMPLE #18

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ENTER MATERIAL CODE AB
ENTER TYPE CODE ..
ENTER SPEC # 1
ENTER NUMBER OF BINS BEING USED 4
IF APP., ENTER % CEMENT OR LIME BEING USED ..

SCREEN IMAGE 3.95

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.4 -- COMPOSITE GRADATIONS
SECTION 1.3 ---- COMPUTE COMPOSITE KEYING WEIGHTS RETAINED

NOTE: Each sieve will require you to either enter the data or if no data to PRESS ENTER KEY to advance to next sieve. This is required for every sieve from the #3" to the -#200.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ENTER TOTAL SAMPLE WEIGHT FROM BIN # 1 6649.
ENTER PERCENT BEING USED FROM BIN # 1 23

COARSE SIEVES

SIEVE	WEIGHT
3"	....
2 1/2"	....
2"	....
1 1/2"	....
1"	....
3/4"	....
1/2"	3636
3/8"	2660
1/4"	302.
#4	19..
-#4	32..

CONTINUE REENTER

SCREEN IMAGE 3.96

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.4 -- COMPOSITE GRADATIONS
SECTION 1.3 ---- COMPUTE COMPOSITE KEYING WEIGHTS RETAINED

COMPOSITE GRADATION

PROPORTIONS =	23	20	27	30	0	ADMIX	COMPOSITE % RET	COMPOSITE % PASS	JMF
3/4"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	
1/2"	55.5	0.0	0.0	0.0	0.0	0.0	12.6	87.0	
3/8"	40.0	9.0	0.0	0.0	0.0	0.0	11.0	76.0	
1/4"	5.0	49.0	1.0	0.0	0.0	0.0	11.3	65.0	
#4	1.0	27.0	10.0	0.0	0.0	0.0	8.1	57.0	
#8	0.0	12.0	30.0	4.0	0.0	0.0	11.2	46.0	
#10	0.0	1.0	10.0	2.0	0.0	0.0	3.5	42.0	
#16	0.0	1.0	19.0	6.0	0.0	0.0	7.1	35.0	
#30	0.0	0.0	12.0	17.0	0.0	0.0	8.3	27.0	
#40	0.0	0.0	3.0	18.0	0.0	0.0	6.2	21.0	
#50	0.0	0.0	3.0	21.0	0.0	0.0	7.1	14.0	
#100	0.0	0.0	4.0	23.0	0.0	0.0	8.0	6.0	
#200	0.0	0.0	3.0	6.0	0.0	0.0	2.6	3.0	
-#200	0.0	0.8	6.9	3.3	0.0	0.0	3.0	0.0	

LOG PRINT BIN % JMF QUIT

SCREEN IMAGE 3.97

CHAPTER 3.1.4 -- COMPUTE A COMPOSITE GRADATION
SECTION 1.4 ---- COMPUTE COMPOSITE KEYING WEIGHTS PASSING

Keying weights passing is actually keying weights retained on each sieve, but using the weights passing to calculate the composite. This will give you a slightly different result because of rounding and correcting to 100%. The screens will be identical to those described in SECTION 1.3 .

SCREEN IMAGE 3.98 prompts you for MATERIAL CODE, TYPE, SPEC #, NO. of BINS and PERCENT ADMIX. Responding with the entries as exhibited, SCREEN IMAGE 3.99 will further prompt you for total sample weight and percent used from Bin # 1. The screen will clear these two items and prompt you for each sieve weight. Upon completion of entering the weights retained for each sieve, the program will ask you if the values are correct "C" or reenter "R". Choosing an "R" will cause the program to start over with this screen. Choosing a "C", the program will then prompt you for the SPLIT SAMPLE WEIGHT, and continue with prompts starting with the #8 screen. If there is no fine screens to consider, press ENTER KEY and the program will continue to BIN #2 and prompt you for the same information as before. I am only going to show you BIN # 1 input screens.
After completing BIN #2,3,&4 input, SCREEN IMAGE 4.00 will appear with a recap of sieve percents retained and the composite sieves % RET and % PASS. "P" will send the screen to your printer. "B" will bring up a new screen for you to reasign BIN PERCENTAGES and recalculate. "J" will give you the opportunity to execute a BIN OPTIMIZER procedure named JIMFIT. This procedure is explained in SECTION 1.6.

NOTE: A MAXIMUM OF 5 BINS MAY BE USED.

This example is EXAMPLE #19 listed in the appendix, and is taken from ADOT MATERIALS TESTING MANUAL / COMPOSITE GRADING, FIGURE 1 & 3

EXAMPLE #19 EXAMPLE #19 EXAMPLE #19 EXAMPLE #19

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ENTER MATERIAL CODE AB
ENTER TYPE CODE ..
ENTER SPEC # 1
ENTER NUMBER OF BINS BEING USED 4
IF APP., ENTER % CEMENT OR LIME BEING USED ..

SCREEN IMAGE 3.98

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.4 -- COMPOSITE GRADATIONS
SECTION 1.3 ---- COMPUTE COMPOSITE USING WEIGHTS PASSING

NOTE: Each sieve will require you to either enter the data or if no data to PRESS ENTER KEY to advance to next sieve. This is required for every sieve from the #3" to the -#200.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ENTER TOTAL SAMPLE WEIGHT FROM BIN # 1 6649.
ENTER PERCENT BEING USED FROM BIN # 1 23

COARSE SIEVES

SIEVE	WEIGHT
3"	....
2 1/2"	....
2"	....
1 1/2"	....
1"	....
3/4"	....
1/2"	3636
3/8"	2660
1/4"	302.
#4	19..
-#4	32..

CONTINUE REENTER

SCREEN IMAGE 3.99

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.4 -- COMPOSITE GRADATIONS
SECTION 1.4 ---- COMPUTE COMPOSITE KEYING WEIGHTS PASSING

COMPOSITE GRADATION

PROPORTIONS =	23	20	27	30	0	ADMIX	COMPOSITE	JMF
3/4"	100.0	100.0	100.0	100.0	0.0	0.0	100.0	
1/2"	45.0	100.0	100.0	100.0	0.0	0.0	87.3	
3/8"	5.0	90.0	100.0	100.0	0.0	0.0	76.2	
1/4"	0.0	42.0	99.0	100.0	0.0	0.0	65.1	
#4	0.0	15.0	89.0	100.0	0.0	0.0	57.0	
#8	0.0	3.0	61.0	96.0	0.0	0.0	45.9	
#10	0.0	2.0	51.0	94.0	0.0	0.0	42.4	
#16	0.0	1.0	32.0	88.0	0.0	0.0	35.2	
#30	0.0	1.0	20.0	71.0	0.0	0.0	26.9	
#40	0.0	1.0	17.0	53.0	0.0	0.0	20.7	
#50	0.0	1.0	14.0	32.0	0.0	0.0	13.6	
#100	0.0	1.0	10.0	9.0	0.0	0.0	5.6	
#200	0.0	0.8	6.8	3.3	0.0	0.0	3.0	

LOG PRINT BIN % JMF QUIT

SCREEN IMAGE 4.00

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.4 -- COMPUTE A COMPOSITE GRADATION
SECTION 1.5 ---- COMPUTE COMPOSITE USING STORED TESTS

This procedure allows you to extract previous stored gradation tests by TEST# and assign each one a BIN NO and PERCENTAGE. The program will then calculate and display the composite. SCREEN IMAGE 4.01, as shown, prompts you for the number of BINS you wish. The screen will clear and then prompt you for the information as shown. Completing the prompts, the same calculated composite screen as shown in the previous examples of composites will be shown.

Consider our four gradations in EXAMPLE #18 and #19 associated with FIG #1, #2, and #3 in the ADOT TESTING MANUAL / COMPOSITE GRADING, are previously stored TEST #'s 64, 65, 66, & 67. Entering as shown in SCREEN IMAGE 4.01, the composite is displayed in SCREEN IMAGE 4.02.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

COMPOSITE USING STORED TESTS

ENTER NUMBER OF BINS BEING USED 4

BIN #	% OF COMP	MATERIAL TYPE	TYPE CODE	SPEC #	SIZE CODE	TEST #	SUFFIX
1	23	AB	..	.	.	64..	..
2	20	AB	..	.	.	65..	..
3	27	AB	..	.	.	66..	..
4	30	AB	..	.	.	67..	..

SCREEN IMAGE 4.01

CHAPTER 3.1.4 -- COMPOSITE GRADATIONS
SECTION 1.5 ---- COMPUTE COMPOSITE USING STORED TESTS

Two things you will notice about SCREEN IMAGE 4.02. One is that the #10 sieve is the same as the #16 sieve. This is because the #10 sieve is the only sieve for which no data is kept within any stored gradation. If this sieve is necessary, then the composite will have to be determined by any one of the other methods previously presented. The second item is that you have another choice of TEST at the bottom of the screen. If you key "T" the program will allow you to reassign another stored TEST # to any one of your BINS.

COMPOSITE GRADATION

PROPORTIONS =	23	20	27	30	0	ADMIX	COMPOSITE	JMF
3/4"	100.0	100.0	100.0	100.0	0.0	0.0	100.0	
1/2"	45.0	100.0	100.0	100.0	0.0	0.0	87.3	
3/8"	5.0	90.0	100.0	100.0	0.0	0.0	76.3	
1/4"	0.0	42.0	99.0	100.0	0.0	0.0	65.1	
#4	0.0	15.0	89.0	100.0	0.0	0.0	57.0	
#8	0.0	3.0	61.0	96.0	0.0	0.0	45.9	
#10	0.0	1.0	32.0	88.0	0.0	0.0	35.2	
#16	0.0	1.0	32.0	88.0	0.0	0.0	35.2	
#30	0.0	1.0	20.0	71.0	0.0	0.0	26.9	
#40	0.0	1.0	17.0	53.0	0.0	0.0	20.7	
#50	0.0	1.0	14.0	32.0	0.0	0.0	13.6	
#100	0.0	1.0	10.0	9.0	0.0	0.0	5.6	
#200	0.0	0.8	6.8	3.3	0.0	0.0	3.0	

LOG PRINT BIN % JMF TEST QUIT

SCREEN IMAGE 4.02

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 3.1.4 -- COMPOSITE GRADATIONS
SECTION 1.5 ---- COMPUTE COMPOSITE USING STORED TESTS

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE 1112 | PROJECT NUMBER IXF-084-(0) | PROJECT NAME ***** TEST PROJECT *****

15 COMPOSITES WHICH BEST MATCH THE JMF TARGET VALUES

3/4 IN	3/8 IN	#8	#40	#200	*	BIN/STOCKPILE PERCENT					*	% ADMIX	*	WEIGHTED DEV.	*
100.0	75.0	45.0	20.0	3.0	*	1	2	3	4	5	*	ADMIX	*	DEV.	*
100.0	74.4	44.7	20.3	2.8	*	25	20	25	30	0	*	0.0	*	0.52	*
100.0	78.8	44.8	20.4	2.9	*	20	25	25	30	0	*	0.0	*	0.77	*
100.0	74.9	45.8	19.4	3.3	*	25	15	35	25	0	*	0.0	*	0.98	*
100.0	70.2	44.5	20.3	2.8	*	30	15	25	30	0	*	0.0	*	1.02	*
100.0	83.1	44.9	20.5	2.9	*	15	30	25	30	0	*	0.0	*	1.12	*
100.0	70.6	45.7	19.3	3.3	*	30	10	35	25	0	*	0.0	*	1.34	*
100.0	79.2	46.0	19.4	3.4	*	20	20	35	25	0	*	0.0	*	1.47	*
100.0	65.8	44.3	20.3	2.8	*	35	10	25	30	0	*	0.0	*	1.53	*
100.0	87.3	45.1	20.5	3.0	*	10	35	25	30	0	*	0.0	*	1.55	*
100.0	74.4	42.9	18.5	3.0	*	25	20	30	25	0	*	0.0	*	1.65	*
100.0	66.3	45.5	19.3	3.2	*	35	5	35	25	0	*	0.0	*	1.69	*
100.0	74.9	47.5	21.1	3.1	*	25	15	30	30	0	*	0.0	*	1.75	*
100.0	78.8	43.0	18.6	3.1	*	20	25	30	25	0	*	0.0	*	1.92	*
100.0	83.5	46.1	19.5	3.4	*	15	25	35	25	0	*	0.0	*	1.97	*
100.0	74.0	43.5	21.3	2.4	*	25	25	15	35	0	*	0.0	*	2.00	*

PRINT CONTINUE

SCREEN IMAGE 4.04

CHAPTER 3.1.4 -- COMPUTE A COMPOSITE GRADATION
SECTION 1.6 ---- JMFIT PROGRAM

The JMFIT PROGRAM is an optimizing program for bin composites. This will calculate the FIFTEEN best solutions in 5% increment adjustments to the bin composite. This is achieved by inputing the desired TARGET VALUE of Percent Passing on each of FIVE (5) different sieves. The design sieves are the 3/4, 3/8, #8, #40, & #200. Considering we use the example in the last section of using stored tests and creating a composite as shown in SCREEN IMAGE 4.02, keying a "J" will bring up SCREEN IMAGE 4.03 prompting you for the target values. Upon entering the values as shown, the program will begin its calculations.

NOTE. This will take the compu'er 5 to 10 minutes to execute.

After completing the calculations, SCREEN IMAGE 4.04 will be displayed showing the 15 best solutions.

ARIZONA DEPARTHENT OF TRANSPORTATION HATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

THE JMF TARGET VALUE FOR THE 3/4" SIEVE = 100

THE JMF TARGET VALUE FOR THE 3/8" SIEVE = 75

THE JMF TARGET VALUE FOR THE #8 SIEVE = 45

THE JMF TARGET VALUE FOR THE #40 SIEVE = 20

THE JMF TARGET VALUE FOR THE #200 SIEVE = 3

SCREEN IMAGE 4.03

CHAPTER 3.1.5 -- SPECIFICATION TRANSACTION (gradations)
SECTION 1.0 ---- OPTIONS

Having chosen "SPECIFICATION TRANSACTIONS" from your previous menu, you have a new menu with options as shown in SCREEN IMAGE 4.07.

The purpose of these SPECS are for you to be able to writea gradation specification for each pairing of "MATERIAL CODE", "TYPE CODE", and "SPEC #". This will allow you to put your material specs in for the project only once and any need for that information will be available to the MATERIAL SAMPLE TESTS as they are logged. Whatever SIEVE NOS., FINENESS MODULUS, SAND EQUIVALENT, or PI you choose will control the printing of the spec columns in the WEEKLY REPORTS. If a Spec Range is not desired in REPORT HEADING, but you would like to view certain items, place any character, such as a 'X' in the field you wish to see displayed on screen or in the printed reports.

By using only three data items, you can control any gradation spec required. This means for example, if there are two distinct materials that have the same "MATERIAL CODE" and "TYPE CODE", they will have a DIFFERENT SPEC # when logged. The SPEC # may be 0-9 or A-Z.

If we choose "ENTER NEW SPEC", SCREEN IMAGE 4.08 appears and prompts you as shown.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

SPECIFICATIONS MENU

ENTER NEW SPECIFICATION

EDIT AN EXISTING SPECIFICATION

DELETE AN EXISTING SPECIFICATION

RETURN

SCREEN IMAGE 4.07

CHAPTER 3.1.5 -- SPECIFICATION TRANSACTIONS (gradations)
SECTION 1.0 ---- OPTIONS

Looking at SCREEN IMAGE 4.08, prompts you for the SIEVES, FM, PI, SE, and AVE for which you can select any combination of data items. To pass over a sieve, press enter key and move to the next. In this example which is EXAMPLE #3 in the appendix, the first spec entered is 100 (100%) passing the 3/8" sieve. The #4 sieve is the next spec desired and a range of 94-100 is keyed as shown. After completing the screen and you wish to change something, you may key in an R and the CURSOR will go back through the screen as you press enter. If you wish to remove an entry item from one of the fields, place the cursor in the first character position within that field and strike the BACKSLASH key (left of the Z) and the entry will be removed. When every item is the way you want, key an L and the spec will be logged.

The field labeled AVE is used if you would like a running test average. In this example a 3 has been used. This means that after every third test an average will be computed and printed on your report.

Upon completion of logging, the program takes you back to the previous menu. If you wish to look at the entire SPEC FILE, select "EDIT EXISTING RECORDS" and SCREEN IMAGE 4.09 will appear.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

MATERIAL SPECIFICATIONS ENTRY

MATERIAL CODE	FA	TYPE CODE	GR	SPEC # 1	
3"	3/4"	#8	#40		
2 1/2"	1/2"	#10	#50	0-30..	
2"	3/8"	100...	#16	45-80.	#100 0-10..
1 1/2"	1/4"	#30	#200		
1"	#4	94-100	FM 0 .. PI 0 SE 0 AVE 3		

LOG REENTER QUIT

SCREEN IMAGE 4.08

CHAPTER 3.1.5 -- SPECIFICATION TRANSACTIONS (gradations)
SECTION 1.0 ---- OPTIONS

********* EDIT EXISTING RECORDS **********

Selecting "EDIT EXISTING RECORDS" from previous menu, SCREEN IMAGE 4.09 appears with a listing of REC #'s associated with 6 data items of the SPEC NUMBER. If you want to see all SPEC ITEMS of a particular SPEC, key in the REC #and SCREEN IMAGE 4.08 will re-appear for your inspection or to change a spec item. Pressing Q will take you back to the previous menu.

******* DELETE SPECIFICATION RECORD *********

Selecting "DELETE SPECIFICATION RECORD", SCREEN IMAGE 4.09 will appear, with a different prompting statement as indicated by line index X ======>. Keying in the REC # will delete the SPEC from the file. Keying a Q will negate any action and move you to previous menu.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

REC #	MATERIAL	TYPE	SPEC #	FM	PI	SE	AVE
1	MA	57	5	2.59	17	87	
2	MA	57	1	2.59	16	87	
3	FA	GR	1	0	0	0	3

ENTER NO. OF RECORD TO BE EDITED OR PRESS ENTER

X =======> ENTER NO. OF RECORD TO BE DELETED OR PRESS ENTER

SCREEN IMAGE 4.09

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 4.1.0 -- CONCRETE UTILITY PROGRAM
SECTION 1.0 ---- OPTIONS

Having chosen "EXECUTE CONCRETE UTILITY PROGRAM" from previous menu shown in SCREEN IMAGE 4.1 , you have a NEW MENU with OPTIONS displayed in SCREEN IMAGE 4.2 . Let us choose "CREATE MIX DESIGN DATA RECORD" and move to SCREEN IMAGE 4.3 which will require input as displayed. This example is EXAMPLE #15 listed in the appendix.

EXAMPLE #15 EXAMPLE #15 EXAMPLE #15 EXAMPLE #15

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ROUTINES

(3.1.0) MATERIALS CALCULATION ROUTINES

(4.1.0) EXECUTE CONCRETE UTILITY PROGRAM

(5.1.0) PRINT/EDIT REPORTS

(7.1.0) MISCELLANEOUS TEST CALCULATIONS

(8.1.0) STATISTICAL ANALYSIS ROUTINES

(9.1.0) PROJECT ID FILE TRANSACTIONS

(10.1.0) END OR CHANGE PROJECTS

USE OR AND THEN ENTER

SCREEN IMAGE 4.1

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 4.1.0 -- CONCRETE UTILITY PROGRAM
SECTION 1.0 ---- OPTIONS

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

OPTIONS

****
* (4.1.0-1.1) - CREATE MIX DESIGN DATA RECORD *
****
(4.1.0-1.2) - DISPLAY A MIX DESIGN

(4.1.0-1.3) - CONCRETE MIX DESIGN TRANSACTIONS

(4.1.0-1.4) - ADJUST A MIX DESIGN

(4.1.1-1.0) - CONCRETE CYLINDER LOGS

- RETURN

USE OR TO SELECT <== TO EXECUTE

SCREEN IMAGE 4.2

CHAPTER 4.1.0 -- CONCRETE UTILITY PROGRAM
SECTION 1.1 ---- CREATE MIX DESIGN DATA RECORD

The information required by this mix design is entered as shown in SCREEN IMAGE 4.3. The data nomenclature on the screen is the same as that displayed in the Mix Design. There should be little difficulty in matching up the items. This information will be used each and every time a "CONCRETE TEST REPORT" is logged. If you make a mistake in an item entry, and have pressed the enter key, you can backtab providing cursor is at the first position of the next field. You are also given the opportunity to correct all fields by KEYING in an 'R' for reenter. the CURSOR will go to the first field. If ok press enter and the CURSOR will move to the next field and eventually you will arrive at the data item to correct. When you have gone through the entire screen and all data is correct, KEY in an 'L' and the mix design will be logged.

If concrete class is other than 'A' or 'S', program will prompt you for "ENTER BREAK TIME" and "DAYS" or "HRS" shown in lower right corner. This is to accomodate any concrete design based on PSI strength within a set duration of DAYS or HOURS. Keying a 'C' to Calculate Agg. Wt's is applicable to CLASS 'A' concrete only and is explained on the following page.

NOTE: A unique concrete design will be determined through the use of fields "CLASS CODE", "PSI", and "DESIGN NUMBER". PSI should be input to even 10 psi increments. The use of a "VENDOR CODE" and a "PRODUCT CODE" is optional at this time. However, these codes should be standarized within the department at some future time.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

CREATING or EXTENDING MIX DESIGN DATA FILE

PROJ. CODE	CLASS CODE	STRENGTH PSI	DESIGN NUMBER	DESIGN DATE	DESIGN SLUMP	DESIGN AIR	VENDOR CODE	PRODUCT CODE
1112	S	3000.	1	042384	3.5.	1...	SANX #1	1234567

MATERIAL	TYPE	%	SOURCE	WT/CU./YD.	SP.GR.	F/M	% ABS.
CEMENT	II	...	PHX/CEM CLRKSDL	480.	3.15.	....	....
F/AGG	..	...	SANTA CRUZ RVR.	1317	2.59.	....	....
C/AGG #1	57	...	SANTA CRUZ RVR.	1745	2.59.	....	....
C/AGG #2	..	...	.....	....	.....	....	....
WATER	..	...	.....	285.	1.0..	....	....

ADDITIVE	TYPE	AMOUNT-UNIT-CU.YD.		
POZZLAN.....	F.....	110....	ENTER BREAK TIME..	DAYS
WRDA 79.....	.....	6OZ/CWT		HRS.
.....	.....	.....		

LOG REENTER CALCULATE AGG. WT'S QUIT

SCREEN IMAGE 4.3

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 4.1.0 -- CONCRETE UTILITY PROGRAM
SECTION 1.1 ---- CREATE MIX DESIGN RECORD

If you are entering a class 'A' concrete mix design and are using %'s of the total aggregate as shown in SCREEN IMAGE 4.3 , the program will prompt you for % of crushed faces on both coarse aggregates as displayed by SCREEN IMAGE 4.31. Upon entering the data, SCREEN IMAGE' 4.32 will display the adjusted aggregate weights.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAML
1112	IXF-084-(0)	***** TEST PROJECT *****

ENTER % CRUSHED FACES ON C/AG #1 95

ENTER % CRUSHED FACES ON C/AG #2 ..

SCREEN IMAGE 4.31

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

CLASS 'A' DESIGN #1 DATE ADJUSTED = 09 02 84

MATERIAL	DESIGN WT. (%)	ADJ. WEIGHT (%)	ADJ. BATCH WEIGHT
CEMENT	480	480	480
F/AGG	1317 (41)	892 (28)	892
C/AGG #1	1745 (59)	2295 (72)	2295
C/AGG #2			
WATER	285	285	285
ADMIX #1	POZZLAN	F	110 /CU.YD.
ADMIX #2	WRDA 79		6OZ/CWT/CU.YD.
ADMIX #3			

MATERIAL	SOURCE	TYPE	Sp/Gr	% Abs.	% Moist	Dsgn F/M	Act F/M
CEMENT	PHX/CEM CLRKSDL	II	3.15				
F/AGG	SANTA CRUZ RVR		2.59	3.5	3.5	3	3
C/AGG #1	SANTA CRUZ RVR	57	2.59	.8	.8	6	6
C/AGG #2							

PRINT LOG QUIT

SCREEN IMAGE 4.32

CHAPTER 4.1.0 -- CONCRETE UTILITY PROGRAM
SECTION 1.2 ---- DISPLAY A MIX DESIGN

To DISPLAY A MIX DESIGN, the program will prompt you for three items as shown in SCREEN IMAGE 4.4 After responding with the last item entered, SCREEN IMAGE 4.5 will appear for your inspection or to edit any changes required. Keying a 'P' will send screen image to printer. keying an 'L' will relog concrete mix design.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ROUTINE TO DISPLAY A CONCRETE MIX DESIGN

ENTER CLASS OF CONCRETE S
ENTER STRENGTH PSI 3000.
ENTER MIX DESIGN NUMBER (1 to 9) 1

SCREEN IMAGE 4.4

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

CREATING or EXTENDING MIX DESIGN DATA FILE

PROJ. CODE	CLASS CODE	STRENGTH PSI	DESIGN NUMBER	DESIGN DATE	DESIGN SLUMP	DESIGN AIR	VENDOR CODE	PRODUCT CODE
1112	S	3000.	1	042384	3.5.	1...	SANX #1	1234567

MATERIAL	TYPE	%	SOURCE	WT/CU./YD.	SP.GR.	F/M	% ABS.
CEMENT	II	...	PHX/CEM CLRKSDL	480.	3.15.	....	....
F/AGG	..	...	SANTA CRUZ RVR.	1317	2.59.	....	....
C/AGG #1	57	...	SANTA CRUZ RVR.	1745	2.59.	....	....
C/AGG #2	..	...	.....	....	.....	....	....
WATER	..	...	.....	285.	1.0..	....	....

ADDITIVE	TYPE	AMOUNT-UNIT-CU.YD.		
POZZLAN.....	F.....	110....	ENTER BREAK TIME..	DAYS
WRDA 79.....	.....	6OZ/CWT		HRS.
.....	.....	.....		

LOG REENTER CALCULATE AGG. WT'S PRINT QUIT

SCREEN IMAGE 4.5

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 4.1.0 -- CONCRETE UTILITY PROGRAM
SECTION 1.4 ---- ADJUST A MIX DESIGN

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

CLASS 'A' DESIGN #1 DATE ADJUSTED = 09 02 84

MATERIAL		DESIGN WT. (%)	ADJ. WEIGHT (%)	ADJ. BATCH WEIGHT
CEMENT		480	480	480
C/AGG #1		1745 (55)	6821 (14)	7026
C/AGG #2				
F/AGG		1317 (45)		
WATER		285	285	80
ADMIX #1	POZZLAN		F	110 /CU.YD.
ADMIX #2	WRDA 79			6OZ/CWT/CU.YD.
ADMIX #3				

MATERIAL	SOURCE	TYPE	Sp/Gr	% Abs.	% Moist	Dsgn F/M	Act F/M
CEMENT	PHX/CEM CLRKSDL	II	3.15				
C/AGG #1	SANTA CRUZ RVR	57	2.59		3		2.5
C/AGG #2					.01		7
F/AGG			2.59		.01		7

PRINT LOG RETURN

SCREEN IMAGE 4.7

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 4.1.1 -- CONCRETE CYL. LOGS
SECTION 1.0 ---- OPTIONS

Choosing "CONCRETE CYL. LOGS" from the previous menu, you are now shown a new menu as displayed in SCREEN IMAGE 4.8 . Lets opt for "LOG CYLINDER (Field Test Data)" first.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

CONCRETE CYLINDER LOGS

****
* (4.1.1-1.1) - LOG CYLINDER (FIELD TEST DATA *
****
(4.1.1-1.2) - LOG CYLINDER (LABORATORY TEST DATA)

(4.1.1-1.3) - DISPLAY CONCRETE CYLINDER TESTS

(4.1.1-1.4) - EDIT FIELD TEST DATA

RETURN

USE OR AND THEN ENTER

SCREEN IMAGE 4.8

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 4.1.1 -- CONCRETE CYL. LOGS
SECTION 1.1 ---- LOG CYLINDER (FIELD TEST DATA)

This is EXAMPLE #16 in the appendix and shows both field data and laboratory data associated with the mix design we entered in example #15.

EXAMPLE #16 EXAMPLE #16 EXAMPLE #16 EXAMPLE #16

SCREEN IMAGE 4.81 will first prompt you as shown for CLASS, STRENGTH PSI & MIX DESIGN NUMBER associated with sample data. After entering last data item the program checks for valid mix design record and if OK will respond with SCREEN IMAGE #4.82. If a match record is not found, a message "DESIGN PARAMETERS NOT FOUND" will appear on the screen and will further prompt you as to what you may do, (REENTER or RETURN).

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

CONCRETE CLY. LOGS .(LABORATORY TEST DATA)

ENTER CLASS OF CONRETE S
ENTER STRENGTH PSI 3000.
ENTER MIX DESIGN NUMBER USED 1

SCREEN IMAGE 4.81

CHAPTER 4.1.1 -- CONCRETE CYL. LOGS
SECTION 1.1 ---- LOG CYLINDER (FIELD TEST DATA)

SCREEN IMAGE 4.82 will prompt you for the information as shown. Many data item values are exhibited as you move your CURSOR to the next field. You may change them as you wish or leave them as displayed. Here again the nomenclature used by the "CONCRETE TEST REPORT" and that displayed in the screen is the same. After data has been visually checked and you choose to key an 'L' as shown by the line I have indexed with an " A=====> ", the data record will be loged and the line will be replaced with that exhibited as " B====> ". The screen will allow you to go back through all of the data item fields and change only those representing another CYLINDER TEST REPORT, and log it as well if a 'C' for continue is entered. This will be repeated untill you key a 'Q'.

NOTE: Keying a 'Q', in LINE A will not log the last test record you have entered on the screen.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

PROJ CODE	CLASS CODE	STRN PSI	DSGN NO.	CYL. NO.	DATE (MMDDYY)	TIME (HHMM)	BATCH QUANITY	TICKET NUMBER
1112	S	3000	1	5...	090284	0900	8.5.	1000

ADMIX #1 AMOUNT	ADMIX #2 AMOUNT	ADMIX #3 AMOUNT	+/- GAL AT PLANT	FLY ASH LB/CY	QTY REP BY TEST	+ GAL @ SITE
110	.....	.....	84....	...	50..	...

SAMPLED BY	DIR	STATION (####+##)	PLACED IN PART OF STRUCTURE	STR. NO.	AIR %	SLUMP IN.	CONC TEMP	AIR TEMP
ZZZZ....	EB	100+00	FLOOR.....	14..	2 ..	4.0.	84	100

A =====> LOG REENTER QUIT

B =====> CONTINUE QUIT

SCREEN IMAGE 4.82

CHAPTER 4.1.1 -- CONCRETE CYL. LOGS
SECTION 1.2 ---- LOG CYLINDER (LABORATORY TEST DATA)

This is EXAMPLE #16 in the appendix and shows both field data and laboratory data associated with the mix design we entered in example #15.

EXAMPLE #16 EXAMPLE #16 EXAMPLE #16 EXAMPLE #16

SCREEN IMAGE 4.83 will first prompt you as shown for CLASS, STRENGTH PSI, MIX DESIGN NUMBER & CYL. TEST NUMBER so that it can retrieve that record previously logged in the procedure "LOG CYLINDER (FIELD TEST DATA)", and attach to it the requested data displayed in the rest of the screen. A message "TEST SPECIFIED NOT FOUND" will appear on the screen if no match is found after entering the first four items. The program will then prompt you as to what to do next (REENTER or RETURN).

As in the "FIELD TEST DATA" entry system the program will allow you to remain on this screen and enter all your CYLINDER BREAKS without going to another menu. Here again the nomenclature used on the "CONCRETE TEST REPORT" and that displayed on the screen is the same. After data has been visually checked and you choose to key an 'L' as shown by the line I have indexed with an " A=====> ", the data record will be logged and the line will be replaced with that exhibited as " B====> ". The screen will allow you to go back through all of the data item fields and change only those representing another CYLINDER TEST REPORT, and log it as well if a 'C' for continue is entered. This will be repeated until you key a 'Q'.

NOTE: Keying a 'Q', in LINE A will not log the last test record you have entered on the screen.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

CONCRETE CYL. LOGS (LABORATORY TEST DATA)

ENTER CLASS OF CONCRETE S
ENTER STRENGH PSI 3000
ENTER MIX DESIGN NUMBER USED ? 1
ENTER CYL. TEST NUMBER ? 1

TEST	S(7)	C(28)	S1(28)	S2(28)	AVE(28)
1..	1945	3268	3420	3490	3455

A =====> LOG REENTER QUIT

B =====> CONTINUE QUIT

SCREEN IMAGE 4.83

CHAPTER 4.1.1 -- CONCRETE CYL. LOGS
SECTION 1.3 ---- DISPLAY CONCRETE CYL. TEST OPTIONS

By choosing "DISPLAY CONCRETE CYLINDER TESTS" from your previous menu, SCREEN IMAGE 4.84 is now before you. The options are selective criterion in which you can limit a grouping of cyl report records for some special consideration.

The options are fairly self explanatory. I would simply experiment with all the choices to familiarize yourself with the results. Each one will prompt you for one to three items of information. The program will next ask if you want a "SCREEN LISTING" or a "PRINTED REPORT". TRY IT.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

CONCRETE CYL. TESTS

DISPLAY OPTIONS

- TEST # TO TEST #
- BY CLASS CODE
- BY STRENGTH PSI
- BY DESIGN NUMBER
- DATE TO DATE
- BY STRUCTURE NUMBER
- RETURN

OR AND THEN ENTER

SCREEN IMAGE' 4.84

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 4.1.1 -- CONCRETE CYL. LOGS
SECTION 1.4 ---- EDIT FIELD TEST DATA

By choosing "EDIT FIELD TEST DATA" from your previous menu, SCREEN IMAGE 4.85 is now before you. This list of records represents all tests or cylinder #'s for which FIELD TEST DATA has been previously entered through the LOG CYLINDER FIELD TEST DATA routine.

All field test data entered resides in a holding file. Upon entering LABORATORY TEST DATA and completing the entire concrete record, it is then passed on to the WEEKLY HOLDING FILE. In other words, this file contains all records for which no LABORATORY TEST DATA has been entered.

You have the option to EDIT or change an existing record, DELETE a record or QUIT. The program will prompt you for record number for either edit or delete. If you choose to EDIT and supply the record number, the program takes you to SCREEN IMAGE 4.82 SECTION 1.1 and continues as if you were doing a reentry of the data.

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

REC #	CLASS CODE	PURPOSE CODE	STRENGTH PSI	DESIGN #	TEST #
1	S	A	3000	1	99
2	P	A	6000	2	6
3	A	A	2500	1	3
4	P	A	6000	2	7
5	P	A	6000	2	8
6	P	A	6000	2	9

EDIT DELETE QUIT

SCREEN IMAGE 4.85

CHAPTER 5.1.0 -- PRINT/EDIT REPORTS
SECTION 1.0 ---- OPTIONS

Having chosen "PRINT/EDIT REPORTS" on the first menu, which is shown as SCREEN IMAGE 5.1, the message "DAILY WEEKLY HISTORICAL" will appear at the bottom of the screen. You are to choose which set of tests are to be used. All tests when first entered are put into the DAILY file until they are uploaded to the mainframe. If the tests you wish to use have not been uploaded to the mainframe, then you should choose "DAILY". After uploading to the mainframe occurs, they are automatically transferred into the "WEEKLY" file. If the tests you wish to use have been uploaded to the mainframe, but you have not yet made your weekly report, you should use "WEEKLY". After the weekly report has been made, the tests should be transferred into the historical file using the "TRANSFER TO HISTORICAL" sub-option of "TRANSFER DATA BASE." If the tests you wish to use were made before the last weekly report, then you should choose "HISTORICAL". Once you choose which set of tests are to be used, the correct files are opened and sorted.

If you have chosen DAILY or WEEKLY, the screen will then display the message "MATERIAL FILE SORT IN PROGRESS ----- PLEASE STANDBY". After a time, depending on how many records are to be sorted, the screen will prompt you with "ENTER REPORT DATE (MMDDYY)". This is the date that will be printed at the top of the reports showing status date of your reports.

After keying in the desired date, the screen will clear and SCREEN IMAGE 5.3 will appear. You are now ready to produce reports and edit any records logged subsequent to your last execution of the procedure in this menu named "TRANSFER DATA BASE". Transferring to historical will move ALL the logged records for ALL projects from the weekly holding file in which they are all stored to multiple files, individually containing each projects' records commonly named "PROJECT HISTORICAL FILE".

This means you MUST run your "WEEKLY REPORTS" prior to running "TRANSFER TO HISTORICAL". There is no possible way to retrieve just those records entered during the past weekly period after "TRANSFER TO HISTORICAL" is run.

If you chose "HISTORICAL" on the first menu, the screen will display SCREEN IMAGE 5.2. Since all historical records are stored in multiple project files, the menu prompts you for the type or category of record. After selecting one of the types, the message "MATERIAL FILE SORT IN PROGRESS ---- PLEASE STANDBY" appears. After a time, depending on how many records are to be sorted, the screen will prompt you with "ENTER REPORT DATE (MMDDYY) .....". You are now ready to "EDIT" or produce "REPORTS" from this one file.

With the exception of "TRANSFER DATA BASE", which is not applicable to the historical files, the program is identical in every way with the "DAILY" or "WEEKLY" options. This means you can SCREEN or PRINT a complete history of materials testing on any of your projects.

*** CONSTRUCTION MATERIALS TESTING ***

CHAPTER 5.1.0 -- PRINT/EDIT REPORTS
SECTION 1.0 ---- OPTIONS

ARIZONA DEPARTMENT OF TRANSPORTATION MATERIALS PROGRAM

PROJECT CODE	PROJECT NUMBER	PROJECT NAME
1112	IXF-084-(0)	***** TEST PROJECT *****

ROUTINES

(3.1.0) MATERIALS CALCULATION ROUTINES

(4.1.0) EXECUTE CONCRETE UTILITY PROGRAM

****

* (5.1.0) PRINT/EDIT REPORTS *

****

(7.1.0) MISCELLANEOUS TEST CALCULATIONS

(8.1.0) STATISTICAL ANALYSIS ROUTINES

(9.1.0) PROJECT ID FILE TRANSACTIONS

(10.1.0) END OR CHANGE PROJECTS

DAILY WEEKLY HISTORICAL

SCREEN IMAGE 5.1
